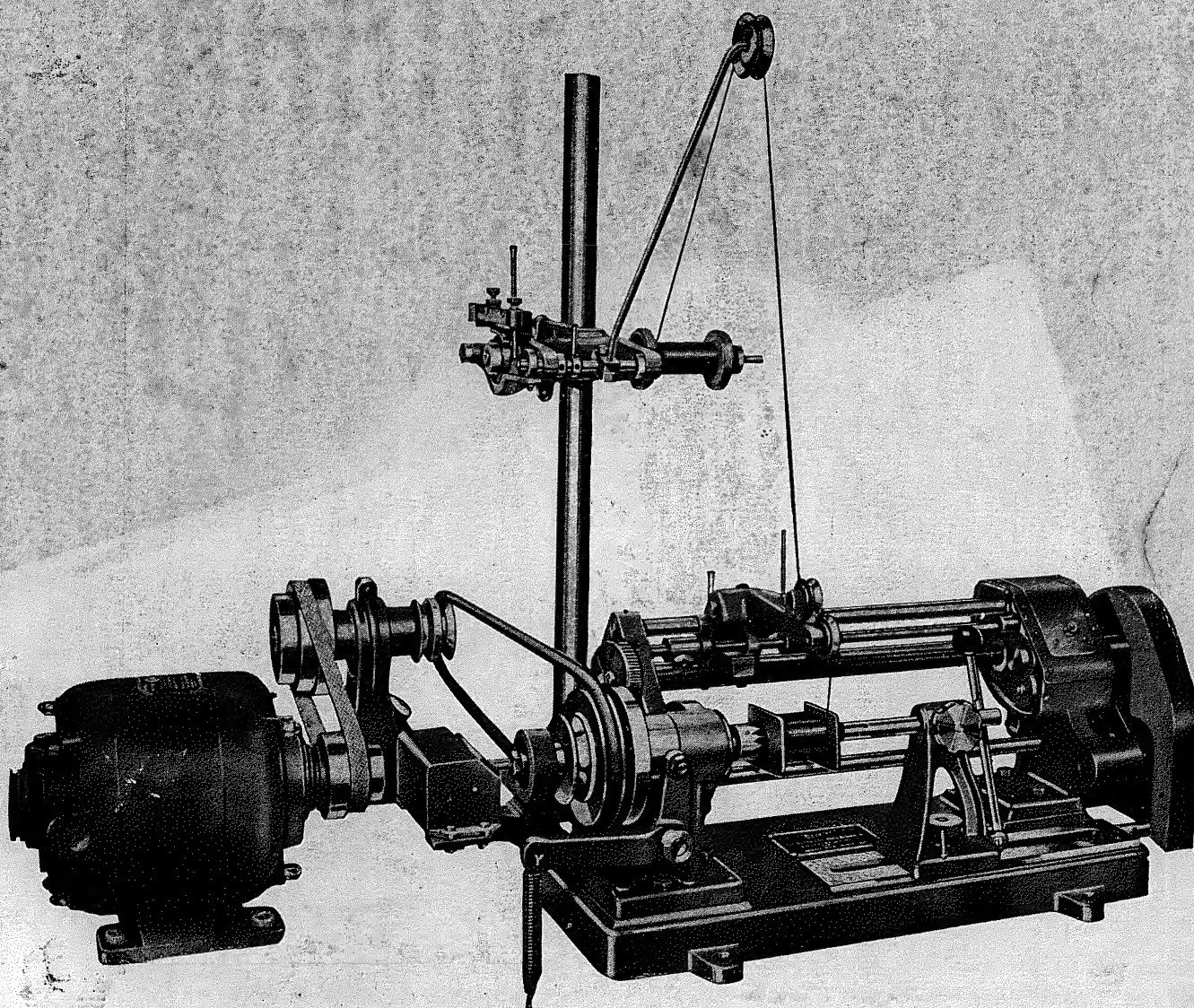




DOUGLAS
No. 6 AND No. 6 EXTENDED BASE
COIL WINDING MACHINES



● INSTALLATION • OPERATION • MAINTENANCE
AND PARTS LIST



DOUGLAS

No. 6 AND No. 6 EXTENDED BASE COIL WINDING MACHINES

INSTRUCTIONS FOR ORDERING SPARE PARTS

WHEN ordering spare parts the following suggestions, if observed, will save unnecessary delays caused by correspondence arising from inadequate descriptions.

1. Before ordering any spare parts reference should be made to the machine to ascertain its type. The type of machine should always be quoted on the order, and the part numbers and descriptions of the parts required listed; these are shown on the plates.
2. If the desired part is not shown in the illustrations or indicated on the parts list, a complete description must be given, and where possible a pattern or sketch should be sent.
3. When ordering gears state number of teeth, width of face, diameter of bore and outside diameter.
4. When ordering pulleys, state diameter, width of face, size of bore and whether plain, flanged, or for Vee belts.

When improvements are made in the design of any machine and the parts are interchangeable, the latest type of part will always be supplied, unless the order states that the part must be the same as already fitted. In this case the serial number of the machine, date of purchase, and source of supply should be given.

The Company retain the right to alter any design without notification and guarantee against faulty workmanship only those parts manufactured by themselves.

Overseas users of Douglas Coil Winding Machines should address their enquiries to the Company's Agents in their country. Those in the United Kingdom should write direct to the address below.

THE AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO. LTD.

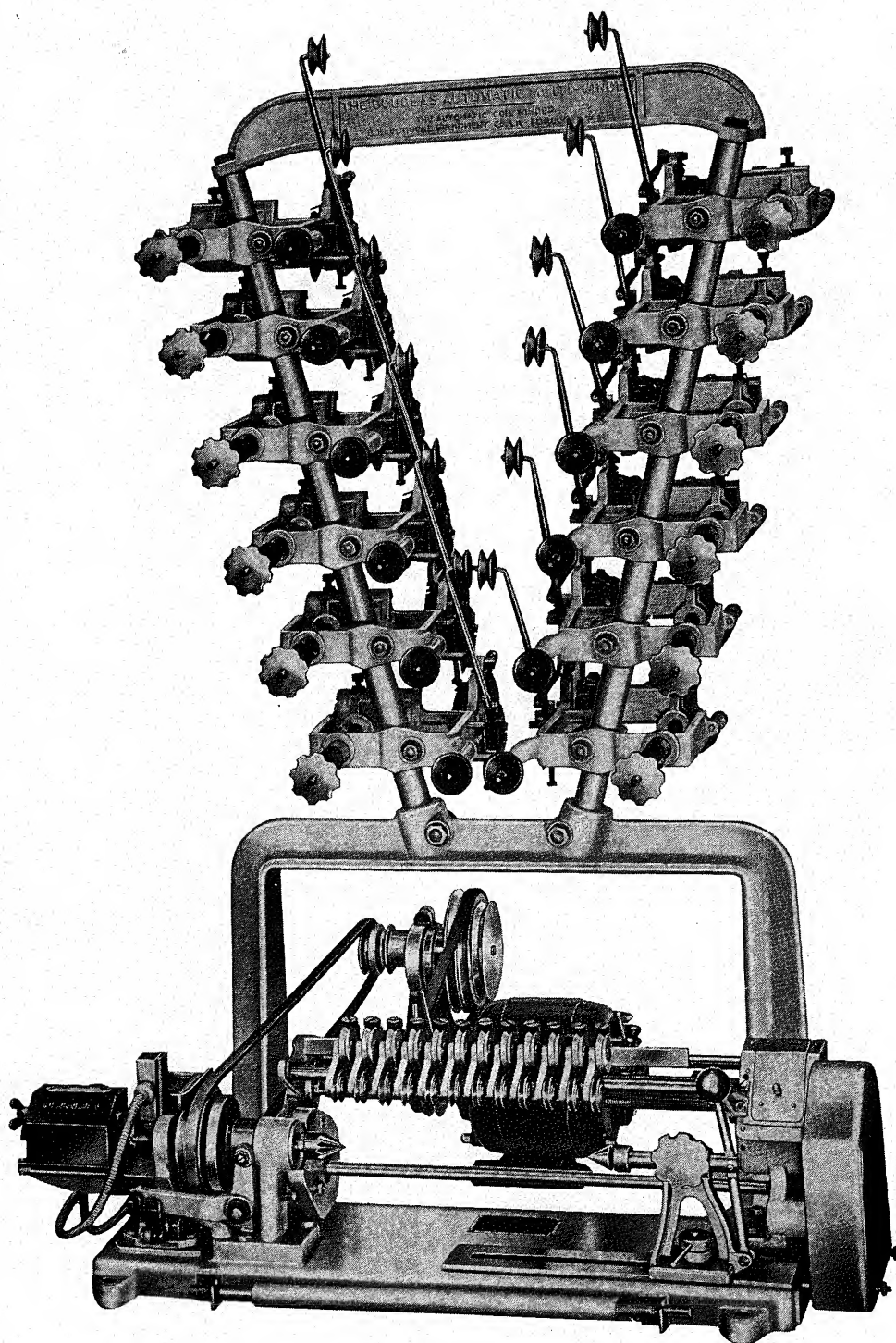
Avocet House, 92-96 Vauxhall Bridge Road, London, S.W.1

Telephone: Victoria 3404 (9 lines).

Telegrams: AUTOWINDA, SOWEST, LONDON

Contractors to the ADMIRALTY, WAR OFFICE,
AIR MINISTRY, POST OFFICE, MINISTRY OF
SUPPLY, CROWN AGENTS for the COLONIES,
and ELECTRICAL and TELEPHONE MANUFACTURERS throughout the World.

"DOUGLAS" COIL WINDING MACHINES



DOUGLAS No. 6 EXTENDED BASE MACHINE

"DOUGLAS" COIL WINDING MACHINES



MANUAL OF INSTALLATION, OPERATION AND MAINTENANCE

THIS instruction and spare parts manual is
intended to cover all types of "DOUGLAS"
No. 6 Coil Winding Machines.

— INDEX —

	PAGE
INSTALLING THE "DOUGLAS" NO. 6 MACHINE	5
INSTALLING THE "DOUGLAS" NO. 6 EXTENDED BASE MACHINE	5
HEADSTOCK SPINDLE SPEEDS	6
SETTING UP THE MACHINE	6
REVOLUTION COUNTER	7
REEL CARRIERS	8
INTERLEAVING THE COILS	8
ATTACHMENTS	8
MAINTENANCE	9
GEAR TABLES	10
OILING INSTRUCTIONS	14
LIST OF PLATES	15

DOUGLAS COIL



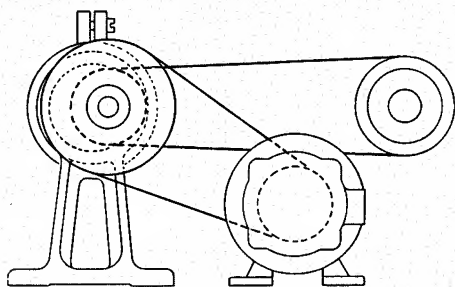
WINDING MACHINES

INSTALLING THE DOUGLAS No. 6 AND No. 6 EXTENDED BASE MACHINES

No. 6 MACHINE

The equipment supplied with a "DOUGLAS" No. 6 Machine includes a set of change gears, "DOUGLAS" standard Reel Carrier with Stand, Foot Treadle, Driving Belts, a Spanner and two hexagon wrenches. To drive the Machine the manufacturers recommend a $\frac{1}{4}$ h.p. motor having a speed of 1,425 R.P.M. and a "DOUGLAS" Countershaft; both of these items are usually purchased from the manufacturer along with the Machine. When choosing the site for the Machine sufficient space should be allowed for a soldering iron, rack for change gears and spanners, materials and finished work.

The Machine should be set out as shown on the Bench Lay-out plan, Plate No. 8 since this arrangement uses the most economical bench space, and, furthermore allows for belt slackness to be taken up by the eccentric in the Countershaft. Having chosen the site, the Machine should first be secured near to the front of the bench and the Countershaft next fastened in the position shown on the Bench Lay-out plan; care being taken to ensure that the eccentric housing is set as shown in the accompanying sketch. The required length of round leather belt can now be measured by passing it through the Headstock Casting and round the desired pulley, then over the Vee pulley on the Countershaft; the belt should be pulled tight and marked and the surplus belt, if any, cut off. The belt is then joined with a staple fastener making sure that it is still passing round the Headstock pulley.



To determine the position of the motor, the canvas belt is passed over the countershaft and motor pulleys, any of the three diameters may be chosen, but they must be relative to each other (see Bench Lay-Out Plan, Plate No. 8). Having

ensured that the pulleys are in alignment the motor may then be secured to the bench.

To fit the Foot Treadle, see Plate No. 5, a hole approximately 1" diameter (25 mm.) is cut in the bench directly beneath the point of attachment on the Clutch Lever, and the Treadle spring is passed through the hole in the bench and hooked on to the Clutch Lever. The Foot Treadle may then be placed in the most convenient position for the operator and secured to the floor. Adjustments may be made by positioning the clamping blocks along the rods and when completed the arrangement should appear as shown in the illustration.

Note. Plate 5 shows the Treadle fitted to the No. 6 Extended Base machine but the above details apply also to the Douglas No. 6.

No. 6 EXTENDED BASE

This Machine being intended for multi-coil winding is usually supplied with Vee belts and driven by a motor of sufficient horse power to do the work required. A pre-set Revolution Counter with an electrical cut-out is fitted, (see Plate No. 5), and special Reel Carriers are used with the Machine. An illustration of the Machine complete with Reel Carriers is shown on Page 3. Foot Treadle, Change Gears, Spanner and Wrenches are included as with the Douglas No. 6 machine.

The Bench space required for the "DOUGLAS" No. 6 Extended Base Machine is greater than that required for the "DOUGLAS" No. 6 Machine and, if necessary, the manufacturers will be pleased to give any advice required.

FINE GAUGE WIRE WINDING

When the "DOUGLAS" No. 6 Machine is required for winding fine gauge wire (50 s.w.g. to 46 s.w.g.) (0.025 mm. to 0.06 mm.) the manufacturers recommend that the Machine be driven with a motor which can be controlled through a rheostat or Variac transformer. This is to ensure that a slow start can be made to avoid breaking the wire when the winding is commenced.

The bench lay-out will depend upon the conditions appertaining to the work required to be carried out by this Machine, and here again the manufacturers will supply any advice necessary.

"DOUGLAS" COIL WINDING MACHINES

HEADSTOCK SPINDLE SPEEDS

The large and small three step pulleys may be interchanged between the motor and countershaft, and thus twelve headstock spindle speeds can be obtained if this combination is used in conjunction with the two Vee pulleys on the Headstock. The table below shows these winding speeds using a motor having 1,425 R.P.M.

		SPEEDS	
		Using Small Pulley on Headstock. R.P.M.	Using Large Pulley on Headstock. R.P.M.
Large Pulley on Motor	}	3500, 2600, 1800	2100, 1500, 1070
Small Pulley on Countershaft			
Small Pulley on Motor	}	1140, 750, 570	680, 460, 350
Large Pulley on Countershaft			

The speeds chosen will, of course, depend upon the gauge of wire being used and the size of coil

being wound. For example, a coil having a section whose sides have a ratio of 2:1 or more and wound with wire 20 s.w.g. (0.9mm.) is wound at the slowest speed, whereas a coil with a round section and using wire of say 42 s.w.g. (0.1mm.) is wound at the fastest speed.

Before Starting

Before any type of "DOUGLAS" No. 6 Machine is started the Gear Box and other oiling points should be lubricated as suggested in the Oiling Chart on Page No. 14.

Guarding Moving Parts

In accordance with Factory Regulations in force in the country where the Machines are being used, Guards should be fitted over belts and other moving parts.

SETTING UP THE MACHINE

Having decided upon the coils to be wound the rate of traverse should first be set; this is controlled by the Change Gears situated on the extreme right hand end of the Gear Box, (see Plate No. 3). To determine the gear combination required, the overall diameter of the wire being used is measured with a micrometer and an allowance to compensate for variation in wire diameter and space factor must be added to the reading—see table below. This calculation will give the traverse in inches or millimetres as desired and if read off on the Gear Tables, Pages 10-13, the gear train will be found opposite under the headings A.B.C.D. To fit the gears the Terminal Nuts, Item 69, Plate No. 3 are loosened and the Guard, Item 15 is slid off in an upward direction; the gears are then placed on the appropriate spindles as shown on the small diagram, see Gear Tables. **IMPORTANT:**

When the quadrant gears are set, slight "play" should be allowed to avoid the gears binding, and the teeth should be lubricated, (see Oiling Chart Page 14). The Guard must always be replaced before using the Machine.

The length of traverse can now be set. To do this the Nuts, Item 10, Plate No. 1 securing the Traverse Reversing Stop, Item 8 are loosened and the stops moved along the Reversing Bar, Item 6 to an approximate position to give the required traverse, the nuts are then tightened and final adjustment is made by turning the Split Nut, Item 7 in a clockwise or anti-clockwise direction. The minimum length of traverse of the Machine is $\frac{1}{4}$ " (6.4 mm.) and the maximum length of traverse is $9\frac{1}{4}$ " (234.6 mm.). See also Narrow Winding Attachment, Page 9.

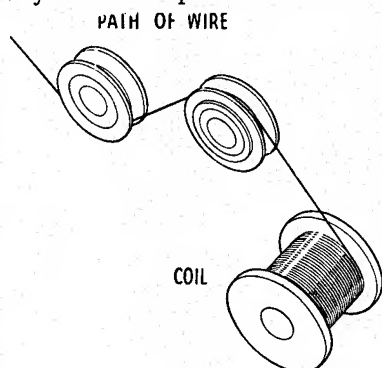
TABLE SHOWING ALLOWANCE TO BE ADDED TO VARIOUS GAUGES OF WIRE

WIRE GAUGE		APPROXIMATE ALLOWANCE	
S.W.G.	MM.	INCHES	MM.
50—46	0.025—0.06	0.0002	0.005
45—38	0.071—0.15	0.0004	0.010
37—30	0.17 —0.315	0.0006	0.015
29—22	0.345—0.711	0.0008	0.020
21—16	0.813—1.630	0.001	0.025

The allowances shown in the Table are only suggested and may have to be varied according to the type of wire and the coils being wound.

"DOUGLAS" COIL WINDING MACHINES

The winding position of the Wire Guide Arm can now be adjusted. To do this, the Arm is moved down as close to the former as possible, that is to say as near as the finished size of coil will allow, the Adjusting Screw, Item 20, Plate No. 4, is then set at this position and locked with the Lock Nut, Item 19. To lock the Wire Guide Arm in the winding position; the Clamping Nut, Item 4, is turned away from the operator. From the Reel



Carrier the wire is fed underneath the rear Guide Pulley and over the top of the front pulley, see accompanying sketch.

Points to be Noted

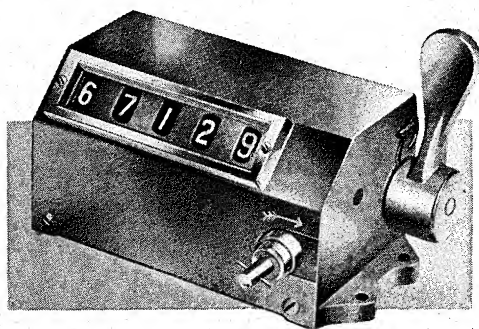
The complete Carriage Assembly, Plate No. 4, can be moved along the guide bars if the Lever, Item No. 18 is pressed away from the operator; this disengages the half nut from the lead screw.

The Wire Guide Arm may be moved away from the completed coil to facilitate loading the new former and returned to the correct winding position if the setting described above has been carefully carried out.

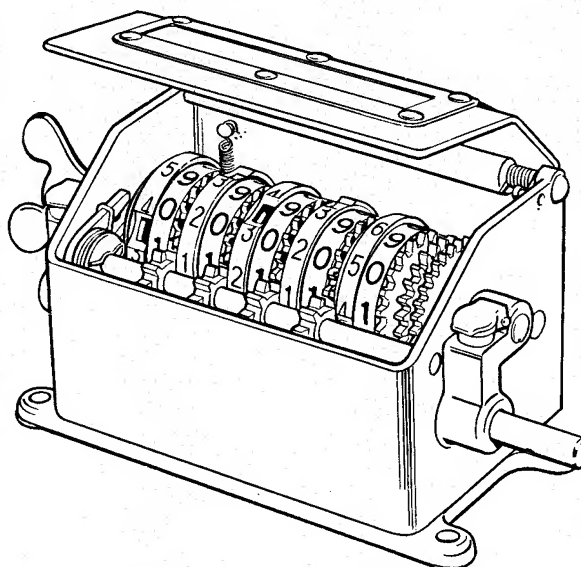
IT MUST BE APPRECIATED THAT PERFECT LAYER WINDING CANNOT BE OBTAINED UNLESS SOME MEDIUM OF INTERLEAVING THE LAYERS OF WIRE IS EMPLOYED. (See under heading INTERLEAVING THE COILS, Page 8.)

REVOLUTION COUNTER

The Revolution Counter fitted to the "DOUGLAS" No. 6 Machine is a five figure lever re-set type and is intended to be run in an anti-clockwise direction. It can, however, if necessary be used to count off subtracted turns from the coil if this is done by hand only. This Counter is shown below (See also Plate No. 7.)



LEVER RE-SET TYPE REVOLUTION COUNTER



VEEDER-ROOT PRE-SET ELECTRICAL TYPE COUNTER AS FITTED TO DOUGLAS No. 6 EXTENDED BASE MACHINE

The Revolution Counter fitted to the "DOUGLAS" No. 6 Extended Base Machine is a Veeder-Root pre-set electrical type and is set up by the following method. The key of the Counter should be rotated so that the figures shown on the white rollers are all noughts; the cover should then be raised and the aluminium rollers pushed to the right and then rotated until the appropriate figure is opposite the window. The cover is then

allowed to return to its normal position, see accompanying sketch.

In operation the aluminium rollers run back to zero, whilst the white rollers show the number of turns which have been wound on to the coil. When the aluminium rollers reach zero the switch at the back of the Counter is closed, this energises the solenoid coil which in turn releases the clutch

"DOUGLAS" COIL WINDING MACHINES

lever on the Headstock. In practice it is found that there is generally no overrun of turns on the coil. Plate No. 5 shows this Revolution Counter together with the Solenoid, etc., fitted to the Headstock.

Electro Magnetic Trip

The Electrical Device for stopping the Machine is fitted to the "DOUGLAS" No. 6 Extended Base Coil Winder and is illustrated on Plate 5. This includes a solenoid etc., connected through levers to the foot treadle and is operated by a pre-determined Revolution Counter as previously described. It will be noted that an adjusting

screw is fitted to the armature of the solenoid and works in conjunction with the micro switch, Item No. 9,

The purpose of this screw is to cut off the current to the solenoid once it has operated. This is necessary since the solenoid operates on AC mains and is inclined to be noisy if the current is allowed to continually pass through the solenoid. The adjusting screw should be reset if it is found that it does not come into contact with the micro switch when the armature of the solenoid is drawn towards the coil. A circuit diagram is shown on Page 29.

REEL CARRIERS

The Reel Carriers that can be used with both types of "DOUGLAS" No. 6 Machine are fully illustrated and explained in the Reel Carrier Manual; a copy should be kept close at hand when the Machines are set up.

The Reel Carrier assembly used with the

"DOUGLAS" No. 6 Extended Base Machine, see Page No. 3, is wired as a unit to allow for wire breakage and wire supply reel run out. Since this unit must work on 12v. a special circuit and control are necessary. For further details see Page 29.

INTERLEAVING THE COILS

To obtain perfect layer winding, the coil should be interleaved with a medium such as Paper, Presspahn or Cambric; the thickness of the material used should be varied according to the thickness of wire, but care should be taken to see that it is thick enough to ensure that the wire does not fall into the interstices of the previous layer. To facilitate interleaving the coil the Head-

stock Spindle can be made to run in a reverse direction from standard, i.e. clockwise viewing the Headstock from the Gear Box end. This means that certain changes of parts are necessary in the Gear Box and reference should be made to the manufacturers who will be pleased to give advice on this matter.

INTER-LEAVING PAPER

Recommended Paper Thickness in relationship to Wire Gauge.

INCHES		METRIC	
PAPER THICKNESS	WIRE GAUGE (S.W.G.)	PAPER THICKNESS (mm)	WIRE DIAMETER (mm)
0.0005"-0.00075"	47-42	0.012-0.018	0.05-0.10
0.001"	47-38	0.025	0.05-0.15
0.0015"	44-34	0.037	0.08-0.23
0.002"	38-30	0.05	0.15-0.32
0.003"	34-30	0.075	0.23-0.32
0.004"	30 and thicker	0.10	0.32 and thicker

ATTACHMENTS

Unless otherwise requested the "DOUGLAS" No. 6 Machine is intended to wind a single coil only; a special device can, however, be fitted to wind up to four coils at one setting. The wire guide arm arrangement for this device is shown on Plate No. 6.

In addition a Gate Attachment device can also be fitted to both types of Machines. This device comprises a gauge known as the "Gate" which can be secured to the carriage of the Machine with the wire guide arms free to be moved along a guide rod.

"DOUGLAS" COIL WINDING MACHINES

This device is used as follows :—assuming it is desired to wind a number of coils with heavy gauge wire or a number of field coils with continuous windings then a Gate may be constructed with notches, the distances between each notch being equal to the overall winding length of the coil plus a margin for spacing pieces on the mandrel. Then having wound the first coil the wire guide arm is moved along the guide rod to the next notch ready for winding the second coil.

This is repeated until the operation is complete.

Other attachments that may be used with the Machine are as follows :—

1.—Narrow Winding Attachment, see Plate No. 6.

This attachment has been designed to wind coils from $\frac{3}{32}$ " (2.38mm.) to $\frac{1}{4}$ " (6.35mm.) wide.

To fit this attachment to an existing Machine it is only necessary to drill two small holes in both side frame and gear box, and add a $\frac{1}{16}$ " (3.2mm.) dia. pin in a suitable position on the wire guide carriage.

2.—The Strip Winding Attachment shown on Plate No. 6 is intended to be used when thin rectangular strips similar to those used in domestic irons and strip resistances have to be wound. Generally these attachments have to be made to suit each size of strip and the manufacturers will be pleased to submit a quotation for this attachment. It is important that a sample strip be sent when making an enquiry.

MAINTENANCE

The "DOUGLAS" No. 6 Machine has proved to be reliable and efficient in operation and although only a minimum amount of maintenance is necessary special attention to the items mentioned below will give results that are essential for good coil winding.

Nut, Item 11, should be examined and if worn replaced. Also this fault may be caused by side play in the Wire Guide Arm, this means that the Carriage Tube, Item 15, may have become worn and therefore should be replaced.

1. **Headstock Clutch** (Plate No. 2)

The Clutch Leather and Spring assembly, Item 35, and the Brake Lever, Item 14, should be examined from time to time and if wear has taken place these parts must be renewed.

2. **Carriage Assembly** (Plate No. 4)

Should it be found that the traverse of the Wire Guide Arm is erratic the Half

3. **Gear Box** (Plate No. 3)

The Ratchet Gears, Item 10, should, from time to time, be examined to ensure that the teeth have not worn. If this is observed the following parts should be renewed :—10619/1, 2 off; 10612/1, 1 off.

To ensure long life for the Machine certain parts must be lubricated at intervals; the Oiling Chart on Page 14 should be used as a reference.

DOUGLAS No. 6. GEAR TABLE

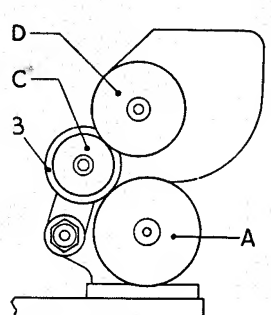
INCHES

TRAVERSE PER TURN IN INCHES	A	B	C	D	TRAVERSE PER TURN IN INCHES	A	B	C	D	TRAVERSE PER TURN IN INCHES	A	B	C	D
*0-0010"	24	75	25	80	0-0096"	30	30	48	50	0-0192"	48	50	60	30
*0-0011"	24	72	25	75	0-0098"	28	50	70	40	0-0194"	32	44	80	30
*0-0012"	24	70	28	80	0-0100"	30	40	48	36	0-0196"	48	50	70	30
*0-0013"	24	65	25	70	0-0102"	34	28	42	50	0-0198"	38	48	80	32
*0-0014"	24	60	28	80	0-0104"	65	30	36	75	0-0200"	50	40	48	30
*0-0015"	24	70	35	80	0-0106"	30	46	65	40	0-0202"	40	44	80	36
*0-0016"	24	60	30	75	0-0108"	36	28	42	50	0-0204"	40	42	60	28
*0-0017"	25	65	32	72	0-0110"	42	28	44	60	0-0206"	34	44	80	30
*0-0018"	28	70	36	80	0-0112"	42	30	48	60	0-0208"	38	40	70	32
*0-0019"	24	70	40	72	0-0114"	38	28	42	50	0-0210"	42	50	70	28
*0-0020"	28	60	30	70	0-0116"	30	60	65	28	0-0212"	42	44	80	36
0-0022"	30	80	44	75	0-0118"	38	46	60	42	0-0214"	44	48	70	30
0-0024"	30	60	36	75	0-0120"	40	28	42	50	0-0216"	44	40	55	28
0-0026"	38	55	30	80	0-0122"	32	30	48	42	0-0218"	48	44	60	30
0-0028"	30	50	28	60	0-0124"	36	42	55	38	0-0220"	44	40	60	30
0-0030"	30	50	30	60	0-0126"	34	60	80	36	0-0222"	46	38	55	30
0-0032"	30	50	32	60	0-0128"	32	30	48	40	0-0224"	44	42	60	28
0-0034"	30	50	34	60	0-0130"	48	60	65	40	0-0226"	46	40	55	28
0-0036"	30	50	36	60	0-0132"	42	28	44	50	0-0228"	34	32	60	28
0-0038"	30	50	38	60	0-0134"	32	44	70	38	0-0230"	46	40	60	30
0-0040"	30	50	40	60	0-0136"	34	30	48	40	0-0232"	46	34	48	28
0-0042"	30	50	42	60	0-0138"	42	28	46	50	0-0234"	36	44	80	28
0-0044"	30	50	44	60	0-0140"	28	30	60	40	0-0236"	38	46	80	28
0-0046"	30	50	46	60	0-0142"	38	28	46	44	0-0238"	40	36	60	28
0-0048"	30	50	48	60	0-0144"	36	30	48	40	0-0240"	36	30	60	30
0-0050"	30	30	40	80	0-0146"	42	30	48	46	0-0242"	50	55	80	30
0-0052"	28	70	65	50	0-0148"	44	65	70	32	0-0244"	46	44	70	30
0-0054"	48	40	36	80	0-0150"	30	30	60	40	0-0246"	46	44	80	34
0-0056"	42	30	30	75	0-0152"	38	30	48	40	0-0248"	46	34	55	30
0-0058"	44	38	30	60	0-0154"	42	30	44	40	0-0250"	30	30	70	28
0-0060"	30	30	36	60	0-0156"	36	50	65	30	0-0252"	44	32	55	30
0-0062"	30	55	50	44	0-0158"	30	38	60	30	0-0254"	32	36	80	28
0-0064"	36	30	32	60	0-0160"	30	50	80	30	0-0256"	48	50	80	30
0-0066"	36	60	55	50	0-0162"	34	42	60	30	0-0258"	42	38	70	30
0-0068"	36	30	34	60	0-0164"	34	38	55	30	0-0260"	60	50	65	30
0-0070"	28	50	60	48	0-0166"	80	46	42	44	0-0262"	40	30	55	28
0-0072"	36	60	48	40	0-0168"	42	40	48	30	0-0264"	38	36	80	32
0-0074"	42	65	55	48	0-0170"	34	40	60	30	0-0266"	34	32	70	28
0-0076"	30	30	38	50	0-0172"	44	40	50	32	0-0268"	50	40	60	28
0-0078"	42	70	65	50	0-0174"	40	46	60	30	0-0270"	34	36	80	28
0-0080"	30	30	40	50	0-0176"	44	40	48	30	0-0272"	42	36	70	30
0-0082"	40	36	48	65	0-0178"	46	42	65	40	0-0274"	46	48	80	28
0-0084"	30	30	42	50	0-0180"	36	40	60	30	0-0276"	70	30	65	55
0-0086"	65	34	36	80	0-0182"	60	36	46	42	0-0278"	50	40	80	36
0-0088"	30	30	44	50	0-0184"	46	40	48	30	0-0280"	36	30	70	30
0-0090"	30	28	42	50	0-0186"	34	40	70	32	0-0282"	46	38	70	30
0-0092"	30	30	46	50	0-0188"	32	40	80	34	0-0284"	65	30	42	32
0-0094"	40	65	55	36	0-0190"	38	40	60	30	0-0286"	30	30	80	28

GEAR SET-UPS GIVEN ARE THEORETICALLY CORRECT BUT ALLOWANCE MUST BE MADE FOR VARIATIONS IN WIRE DIAMETER, ETC. THE ACTUAL SET-UPS MUST BE FOUND BY TRIAL

DOUGLAS No. 6. GEAR TABLE

INCHES

TRAVERSE PER TURN IN INCHES	A	B	C	D	TRAVERSE PER TURN IN INCHES	A	B	C	D	TRAVERSE PER TURN IN INCHES	A	B	C	D
0-0288"	44	30	55	28	0-0384"	80	32	46	30	0-0600"				
0-0290"	46	34	60	28	0-0386"	80	34	46	28	0-0605"				
0-0292"	50	40	70	30	0-0388"	70	30	50	30	0-0610"				
0-0294"	38	30	65	28	0-0390"	80	55	75	28	0-0615"				
0-0296"	40	36	80	30	0-0392"	80	32	44	28	0-0620"				
0-0298"	38	34	80	30	0-0394"	80	44	65	30	0-0625"	80	32	75	30
0-0300"	48	32	60	30	0-0396"	65	30	55	30	0-0630"	80	34	75	28
0-0302"	70	30	44	34	0-0398"	70	44	75	30	0-0635"				
0-0304"	80	40	70	46	0-0400"	80	40	60	30	0-0640"				
0-0306"	80	34	65	50	0-0405"	80	40	65	32	0-0645"				
0-0308"	60	28	46	32	0-0410"	80	32	46	28	0-0650"				
0-0310"	48	28	65	36	0-0415"	70	30	50	28	0-0655"				
0-0312"	48	44	80	28	0-0420"	80	38	60	30	0-0660"				
0-0314"	80	28	55	50	0-0425"	80	30	48	30	0-0665"	80	30	75	30
0-0316"	80	38	60	40	0-0430"	80	34	55	30	0-0670"	80	32	75	28
0-0318"	80	40	70	44	0-0435"	80	40	70	32	0-0675"				
0-0320"	80	30	60	50	0-0440"	80	34	60	32	0-0680"				
0-0322"	80	30	46	38	0-0445"	80	36	60	30	0-0685"				
0-0324"	60	30	65	40	0-0450"	72	40	75	30	0-0690"				
0-0326"	80	30	44	36	0-0455"	80	44	70	28	0-0695"				
0-0328"	75	50	70	32	0-0460"	72	40	75	30	0-0700"				
0-0330"	80	65	75	28	0-0465"	80	40	65	28	0-0715"	80	30	75	28
0-0332"	80	30	60	48	0-0470"	75	32	60	30	FORMULA TO FIND GEARS A.B.C. & D.				
0-0334"	46	30	70	32	0-0475"	80	36	60	28					
0-0336"	80	30	48	38	0-0480"	80	36	65	30	DIA. OF WIRE = $\frac{A}{B} \times \frac{C}{D}$ 0-010				
0-0338"	46	28	70	34	0-0485"	70	36	75	30					
0-0340"	44	28	65	30	0-0490"	80	36	75	34	POSITION OF GEARS A.B.C. & D.				
0-0342"	80	38	65	40	0-0495"	75	28	70	38					
0-0344"	80	32	55	40	0-0500"	70	30	60	28					
0-0346"	80	30	65	50	0-0505"	80	34	60	28					
0-0348"	60	28	65	40	0-0510"	80	30	65	34	GEARS PROVIDED 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 55, 60, 65, 70, 75, 80				
0-0350"	42	28	70	30	0-0515"	75	30	70	34					
0-0352"	80	34	60	40	0-0520"	80	36	75	32	ADDITIONAL GEARS 24, 25 & 72, ARE REQUIRED FOR COMBINATIONS MARKED (*)				
0-0354"	80	30	48	36	0-0525"	80	30	75	38					
0-0356"	46	28	65	30	0-0530"	75	34	72	30	THESE MAY BE PURCHASED FROM THE COMPANY, For part numbers see page 20.				
0-0358"	40	28	75	30	0-0535"	80	32	60	28					
0-0360"	80	34	46	30	0-0540"	80	32	65	30					
0-0362"	80	55	70	28	0-0545"									
0-0364"	80	36	46	28	0-0550"	80	34	75	32					
0-0366"	60	30	55	30	0-0555"	80	36	70	28					
0-0368"	80	40	70	38	0-0560"									
0-0370"	80	34	44	28	0-0565"									
0-0372"	80	30	42	30	0-0570"	80	30	60	28					
0-0374"	75	40	60	30	0-0575"									
0-0376"	80	34	48	30	0-0580"									
0-0378"	70	40	65	30	0-0585"	80	32	70	30					
0-0380"	80	42	60	30	0-0590"	80	34	75	30					
0-0382"	65	34	60	30	0-0595"	80	36	75	28					

GEAR SET-UPS GIVEN ARE THEORETICALLY CORRECT BUT ALLOWANCE MUST BE MADE FOR VARIATIONS IN WIRE DIAMETER, ETC. THE ACTUAL SET-UPS MUST BE FOUND BY TRIAL.

DOUGLAS No. 6. GEAR TABLE

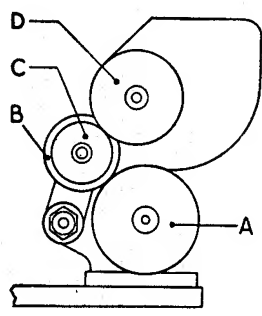
METRIC

TRAVERSE PER TURN IN MM.	A	B	C	D	TRAVERSE PER TURN IN MM.	A	B	C	D	TRAVERSE PER TURN IN MM.	A	B	C	D
*0-0254	24	75	25	80	0-2438	30	30	48	50	0-4876	48	50	60	30
*0-0279	24	72	25	75	0-2489	28	50	70	40	0-4927	32	44	80	30
*0-0305	24	70	28	80	0-2540	30	40	48	36	0-4978	48	50	70	30
*0-0330	24	65	25	70	0-2590	34	28	42	50	0-5029	38	48	80	32
*0-0355	24	60	28	80	0-2641	65	30	36	75	0-5080	50	40	48	30
*0-0381	24	70	35	80	0-2692	30	46	65	40	0-5130	40	44	80	36
*0-0406	24	60	30	75	0-2743	36	28	42	50	0-5181	40	42	60	28
*0-0431	25	65	32	72	0-2794	42	28	44	60	0-5232	34	44	80	30
*0-0457	28	70	36	80	0-2844	42	30	48	60	0-5283	38	40	70	32
*0-0482	24	70	40	72	0-2895	38	28	42	50	0-5334	42	50	70	28
*0-0508	28	60	30	70	0-2946	30	60	65	28	0-5384	42	44	80	36
0-0558	30	80	44	75	0-2997	38	46	60	42	0-5435	44	48	70	30
0-0609	30	60	36	75	0-3048	40	28	42	50	0-5486	44	40	55	28
0-0660	38	55	30	80	0-3098	32	30	48	42	0-5537	48	44	60	30
0-0711	30	50	28	60	0-3149	36	42	55	38	0-5588	44	40	60	30
0-0762	30	50	30	60	0-3200	34	60	80	36	0-5638	46	38	55	30
0-0812	30	50	32	60	0-3251	32	30	48	40	0-5689	44	42	60	28
0-0863	30	50	34	60	0-3302	48	60	65	40	0-5740	46	40	55	28
0-0914	30	50	36	60	0-3353	42	28	44	50	0-5791	34	32	60	28
0-0965	30	50	38	60	0-3403	32	44	70	38	0-5842	46	40	60	30
0-1016	30	50	40	60	0-3454	34	30	48	40	0-5892	46	34	48	28
0-1066	30	50	42	60	0-3505	42	28	46	50	0-5943	36	44	80	28
0-1117	30	50	44	60	0-3556	28	30	60	40	0-5994	38	46	80	28
0-1168	30	50	46	60	0-3606	38	28	46	44	0-6045	40	36	60	28
0-1219	30	50	48	60	0-3657	36	30	48	40	0-6096	36	30	60	30
0-1270	30	30	40	80	0-3708	42	30	48	46	0-6146	50	55	80	30
0-1320	28	70	65	50	0-3759	44	65	70	32	0-6197	46	44	70	30
0-1371	48	40	36	80	0-3810	30	30	60	40	0-6248	46	44	80	34
0-1422	42	30	30	75	0-3860	38	30	48	40	0-6299	46	34	55	30
0-1473	44	38	30	60	0-3911	42	30	44	40	0-6350	30	30	70	28
0-1524	30	30	36	60	0-3962	36	50	65	30	0-6400	44	32	55	30
0-1575	30	55	50	44	0-4013	30	38	60	30	0-6451	32	36	80	28
0-1625	36	30	32	60	0-4064	30	50	80	30	0-6502	48	50	80	30
0-1676	36	60	55	50	0-4114	34	42	60	30	0-6553	42	38	70	30
0-1727	36	30	34	60	0-4165	34	38	55	30	0-6604	60	50	65	30
0-1778	28	50	60	48	0-4216	80	46	42	44	0-6655	40	30	55	28
0-1828	36	60	48	40	0-4267	42	40	48	30	0-6705	38	36	80	32
0-1879	42	65	55	48	0-4318	34	40	60	30	0-6756	24	32	70	28
0-1930	30	30	38	50	0-4368	44	40	50	32	0-6807	50	40	60	28
0-1981	42	70	65	50	0-4419	40	46	60	30	0-6858	34	36	80	28
0-2032	30	30	40	50	0-4470	44	40	48	30	0-6909	42	36	70	30
0-2082	40	36	48	65	0-4521	46	42	65	40	0-6960	46	48	80	28
0-2133	30	30	42	50	0-4572	36	40	60	30	0-7010	70	30	65	55
0-2184	65	34	36	80	0-4622	60	36	46	42	0-7061	50	40	80	36
0-2235	30	30	44	50	0-4673	46	40	48	30	0-7112	36	30	70	30
0-2286	30	28	42	50	0-4724	34	40	70	32	0-7163	46	38	70	30
0-2336	30	30	46	50	0-4775	32	40	80	34	0-7213	65	30	42	32
0-2387	40	65	55	36	0-4826	38	40	60	30	0-7264	30	30	80	28

GEAR SET-UPS GIVEN ARE THEORETICALLY CORRECT BUT ALLOWANCE MUST BE MADE FOR VARIATIONS IN WIRE DIAMETER, ETC. THE ACTUAL SET-UPS MUST BE FOUND BY TRIAL.

DOUGLAS No. 6. GEAR TABLE

METRIC

TRAVERSE PER TURN IN MM.	A	B	C	D	TRAVERSE PER TURN IN MM.	A	B	C	D	TRAVERSE PER TURN IN MM.	A	B	C	D
0-7315	44	30	55	28	0-9753	80	32	46	30	1-5240				
0-7366	46	34	60	28	0-9804	80	34	46	28	1-5357				
0-7416	50	40	70	30	0-9855	70	30	50	30	1-5494				
0-7467	38	30	65	28	0-9906	80	55	75	28	1-5621				
0-7518	40	36	80	30	0-9957	80	32	44	28	1-5748				
0-7569	38	34	80	30	1-0007	80	44	65	30	1-5875	80	32	75	30
0-7620	48	32	60	30	1-0060	65	30	55	30	1-6002	80	34	75	28
0-7670	70	30	44	34	1-0110	70	44	75	30	1-6129				
0-7721	80	40	70	46	1-0160	80	40	60	30	1-6256				
0-7772	80	34	65	50	1-0287	80	40	65	32	1-6383				
0-7883	60	28	46	32	1-0414	80	32	46	28	1-6510				
0-7874	48	28	65	36	1-0541	70	30	50	28	1-6637				
0-7925	48	44	80	28	1-0668	80	38	60	30	1-6764				
0-7975	80	28	55	50	1-0795	80	30	48	30	1-6891	80	30	75	30
0-8026	80	38	60	40	1-0922	80	34	55	30	1-7018	80	32	75	28
0-8077	80	40	70	44	1-1049	80	40	70	32	1-7145				
0-8128	80	30	60	50	1-1176	80	34	60	32	1-7272				
0-8179	80	30	46	38	1-1303	80	36	60	30	1-7399				
0-8229	60	30	65	40	1-1430	72	40	75	30	1-7526				
0-8280	80	30	44	36	1-1557	80	44	70	28	1-7656				
0-8331	75	50	70	32	1-1684	55	32	75	28	1-7780				
0-8382	80	65	75	28	1-1811	80	40	65	28	1-7907	80	30	75	28
0-8432	80	30	60	48	1-1938	75	32	60	30	FORMULA TO FIND GEARS A.B.C. & D.				
0-8484	46	30	70	32	1-2065	80	36	60	28					
0-8534	80	30	48	38	1-2192	80	36	65	30	DIA. OF WIRE = $\frac{A}{B} \times \frac{C}{D}$ 0-010				
0-8585	46	28	70	34	1-2319	70	36	75	30					
0-8636	44	28	65	30	1-2446	80	36	75	34	POSITION OF GEARS A.B.C. & D.				
0-8686	80	38	65	40	1-2573	75	28	70	38					
0-8738	80	32	55	40	1-2700	70	30	60	28					
0-8788	80	30	65	50	1-2827	80	34	60	28					
0-8839	60	28	65	40	1-2954	80	30	65	34	GEARS PROVIDED 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 55, 60, 65, 70, 75, 80 ADDITIONAL GEARS 24, 25 & 72 ARE REQUIRED FOR COMBINATIONS MARKED (*) THESE MAY BE PURCHASED FROM THE COMPANY. For part numbers see page 20.				
0-8890	42	28	70	30	1-3081	75	30	70	34					
0-8940	80	34	60	40	1-3208	80	36	75	32					
0-8991	80	30	48	36	1-3335	80	30	75	38					
0-9042	46	28	65	30	1-3462	75	34	72	30					
0-9093	40	28	75	30	1-3589	80	32	60	28					
0-9144	80	34	46	30	1-3716	80	32	65	30					
0-9194	80	55	70	28	1-3843									
0-9245	80	36	46	28	1-3970	80	34	75	32					
0-9296	60	30	55	30	1-4097	80	36	70	28					
0-9347	80	40	70	38	1-4224									
0-9398	80	34	44	28	1-4351									
0-9448	80	30	42	30	1-4478	80	30	60	28					
0-9499	75	40	60	30	1-4605									
0-9550	80	34	48	30	1-4732									
0-9601	70	40	65	30	1-4859	80	32	70	30					
0-9662	80	42	60	30	1-4986	80	34	75	30					
0-9702	65	34	60	30	1-5113	80	36	75	28					

GEAR SET-UPS GIVEN ARE THEORETICALLY CORRECT BUT ALLOWANCE MUST BE MADE FOR VARIATIONS IN WIRE DIAMETER, ETC. THE ACTUAL SET-UPS MUST BE FOUND BY TRIAL.

OILING DATA CHART		
DESCRIPTION AND REFERENCE	GRADE OF OIL	OILING PERIOD
COMPLETE MACHINE (Plate 1) Reversing Bar Oiling Points Lead Screw Guide Bars Ball Races, Sections A B & D	Medium Grade Machine Oil	2-3 drops daily. 2-3 drops alternate days. 2-3 drops alternate days. 2-3 drops weekly.
HEADSTOCK (Plate 2) Ball Race Item 16 Ball Race " 45 Ball Race " 46 (Oil through pulley, Item 37) Pivot Screws " 33	Medium Grade Machine Oil	2-3 drops alternate days. 2-3 drops alternate days. 2-3 drops alternate days. 2-3 drops monthly.
GEAR BOX (Plate 3) Oil Bath Trip Arm (Ball Race, etc.) Item 20 Change Gears	Medium Grade Machine Oil	Top up sump monthly. 4-5 drops weekly. 2-3 drops when setting.
TAIL STOCK (Plate 4) Cone Centre Item 1 Tail Stock Spindle " 3 Lever (Fulcrum points) " 12	Medium Grade Machine Oil	2-3 drops daily. 2-3 drops alternate days. 2-3 drops weekly.
CARRIAGE (Plate 4) Wire Guide Arm Item 2 (Fulcrum bearing) Carriage Tube " 15 Wire Guide Pulleys 5 & 10 NOTE : CARRIAGE (Plate 4) Wire Guide Pulleys (Items 5 & 10)	Medium Grade Machine Oil	2-3 drops weekly. 2-3 drops. daily (See Note). These items should be dismantled periodically and thoroughly cleaned to ensure free running of the ball journals and lubrication with Light Grade Oil when assembled.

LIST OF PLATES

<i>Plate</i>	<i>Title</i>	<i>Page</i>
1	<i>General Arrangement Douglas D/6</i>	17
2	HEAD STOCK	19
3	GEARBOX	21
4	TAILSTOCK	23
„	CARRIAGE ASSEMBLY	23
5	ELECTRICAL GEAR	25
„	TREADLE	25
6	NARROW WINDING ATTACHMENT	27
„	STRIP WINDING ATTACHMENT	27
„	MULTIPLE WINDING ARM	27
7	LEVER RE-SET TYPE COUNTER	28
8	BENCH LAYOUT	29
„	ELECTRICAL CIRCUITS	29

Plate 1—Parts List

ITEM NO.	DESCRIPTION	PART NO.	NO. OFF	ITEM NO.	DESCRIPTION	PART NO.	NO. OFF
1	Stud	10819/1	1	15	Dust Cover	10820/2	1
2	Terminal Nut	10807/2	2	16	Spindle	10821/1	1
3	Dust Cover	10817/2	1	17	Driving Shaft	10816/1	1
4	Ball Race	BR.6	1	18	Pin Securing 75 Teeth	R.27	1
5	Lead Screw	20087/1	1	19	Driver Gear, 75 Teeth	10814/2	1
6	Reversing Bar	10824/1	1	20	Ball Race	BR.6	1
7	Adjusting Nut	10827/2	2	21	Pin Securing Flanged Collar	R.27	1
8	Reversing Stop	10828/2	2	22	Flanged Collar	10815/1	1
9	Eye Bolt	11887/2	2	23	Small Gear Cover	10810/3	1
10	Special Hex. Nut	10830/2	2	24	Bottom Stay Bar	10812/1	1
11	Stud	10823/1	1	25	Top Stay Bar	10813/1	1
12	Pin Securing 55 Teeth Gear	R.27	1	26	L.H. Side Frame	40073/3	1
13	Idler Gear, 55 Teeth	10822/2	1	27	Screw Securing Item		
14	Ball Races	BR.5	2	26	BSF.12		2

IMPORTANT.

All Machines supplied after May, 1953, are fitted with a hand traverse mechanism, allowing accurate positioning of the Wire Guide Arm.

Machines supplied previous to the above date can be fitted with this device when the following parts are purchased :

Lead Screw Part No. 20087/1.

Neutralising Lever Part No. 14543/1.

Hand Wheel Part No. 14545/1.

Dust Cover Part No. 10817/2.

PLATE 1—GENERAL ARRANGEMENT

DOUGLAS NO. 6

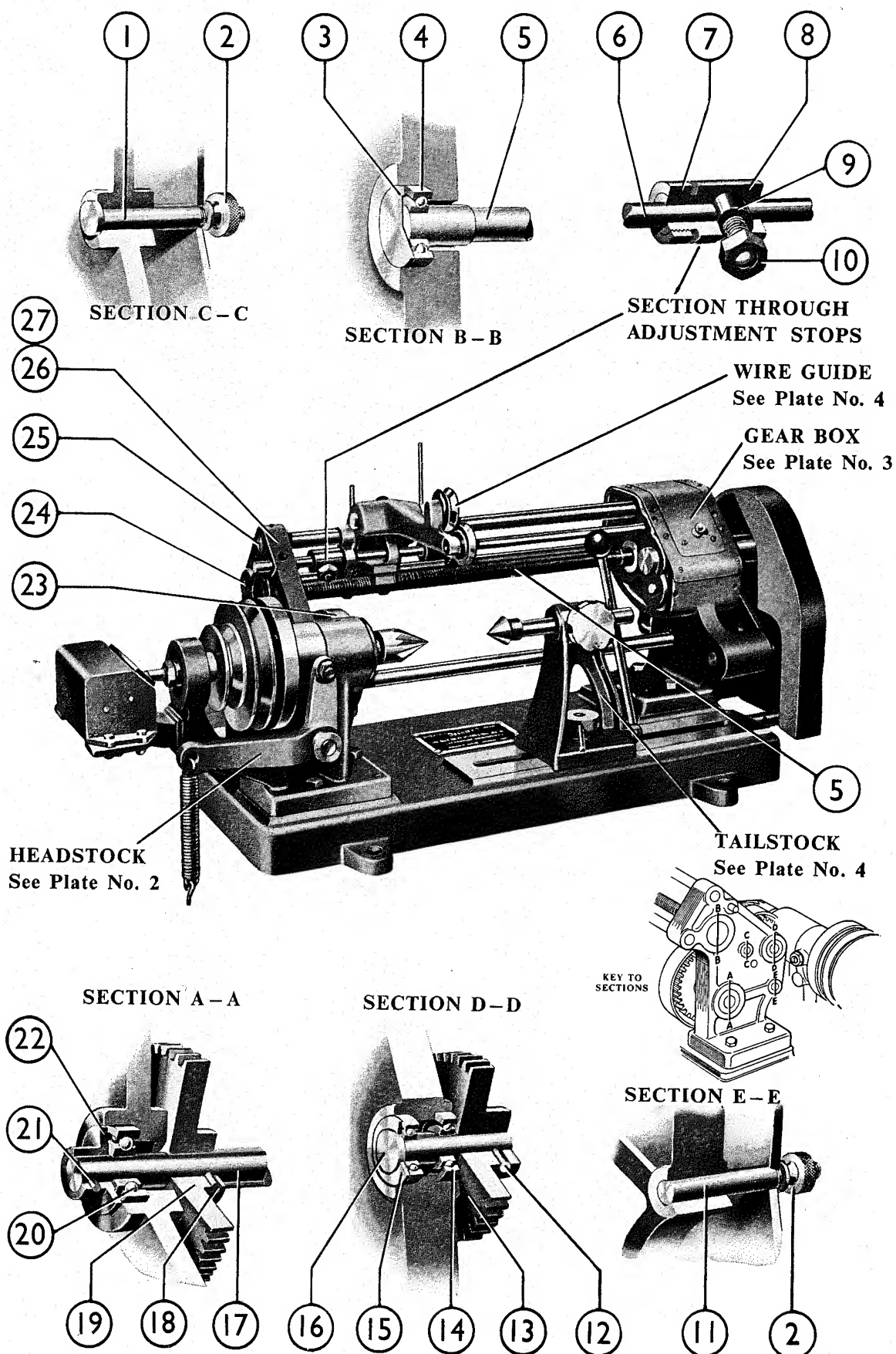


Plate 2—Parts List

ITEM NO.	DESCRIPTION	PART NO.	NO. OFF	ITEM NO.	DESCRIPTION	PART NO.	NO. OFF
1	Revolution Counter (Anti-clockwise) . . .	10217/3	1	23	Bush	10787/1	1
2	Screws Securing Revolution Counter . . .	S.449	4	24	Adjusting Screw . . .	S.118	1
3	Nuts for Item 2 . . .	N.23	4	25	Lock Nut for Item 24	N.20	1
4	Bracket for Revolution Counter . . .	20113/3	1	26	Screws Securing Headstock . . .	BSF.12	2
5	Screws Securing Revolution Counter Bracket	S.449	2	27	Clutch Arm . . .	20114/3	1
6	Headstock Casting . . .	40076/3	1	28	Collar	10789/1	1
7	Clutch Return Spring	10784/1	1	29	Screw Securing Item 28	AS.24	1
8	Screws Retaining Sliding Keys . . .	10783/1	2	30	Spindle for Clutch Arm	10791/1	1
9	Sliding Key . . .	10775/1	1	31	Thrust Housing . . .	10778/2	1
10	Thrust Race . . .	BR.15	1	32	Lock Nuts for Item 33	N.29	2
11	Clutch Brake Leather	10774/1	1	33	Pivot Screw . . .	10776/1	2
12	Spring for Clutch Brake	10773/1	1	34	Clutch Plate . . .	20112/2	1
13	Screws Securing Items 11 and 12 . . .	S.494	2	35	Clutch Leather and Spring Assembly . . .	13769/A	2
14	Clutch Brake Lever	10772/3	1	36	Screws Securing Item 35	S.463	4
15	Pin Securing Clutch Brake Lever . . .	R.27	1	37	Driving Pulley . . .	20111/2	1
16	Ball Race	BR.12	1	38	Washer	10786/1	1
17	Headstock Pinion 27 Teeth	10788/1	1	39	Dust Washer . . .	10790/2	1
18	Pin Securing Item 17	R.27	1	40	Bush (Ball Race Mounting) . . .	10777/1	1
19	Fluted Cone . . .	10780/1	1	41	Pin Securing Item 40	R.27	1
20	Screw Securing Cone	AS.23	1	42	Headstock Spindle . . .	20115/1	1
21	Cover Plate . . .	10779/2	1	43	Lock Nuts . . .	N.31	2
22	Screws Securing Cover Plate	S.685	3	44	Washer	10785/2	1
				45	Ball Race	BR.11	1
				46	Ball Races	BR.7	2

In some cases the clutch may have been modified to suit customer's requirements. Should the parts of the clutch appear to be different from those illustrated, the serial number of the Machine should be given when ordering spare parts.

PLATE 2—HEADSTOCK

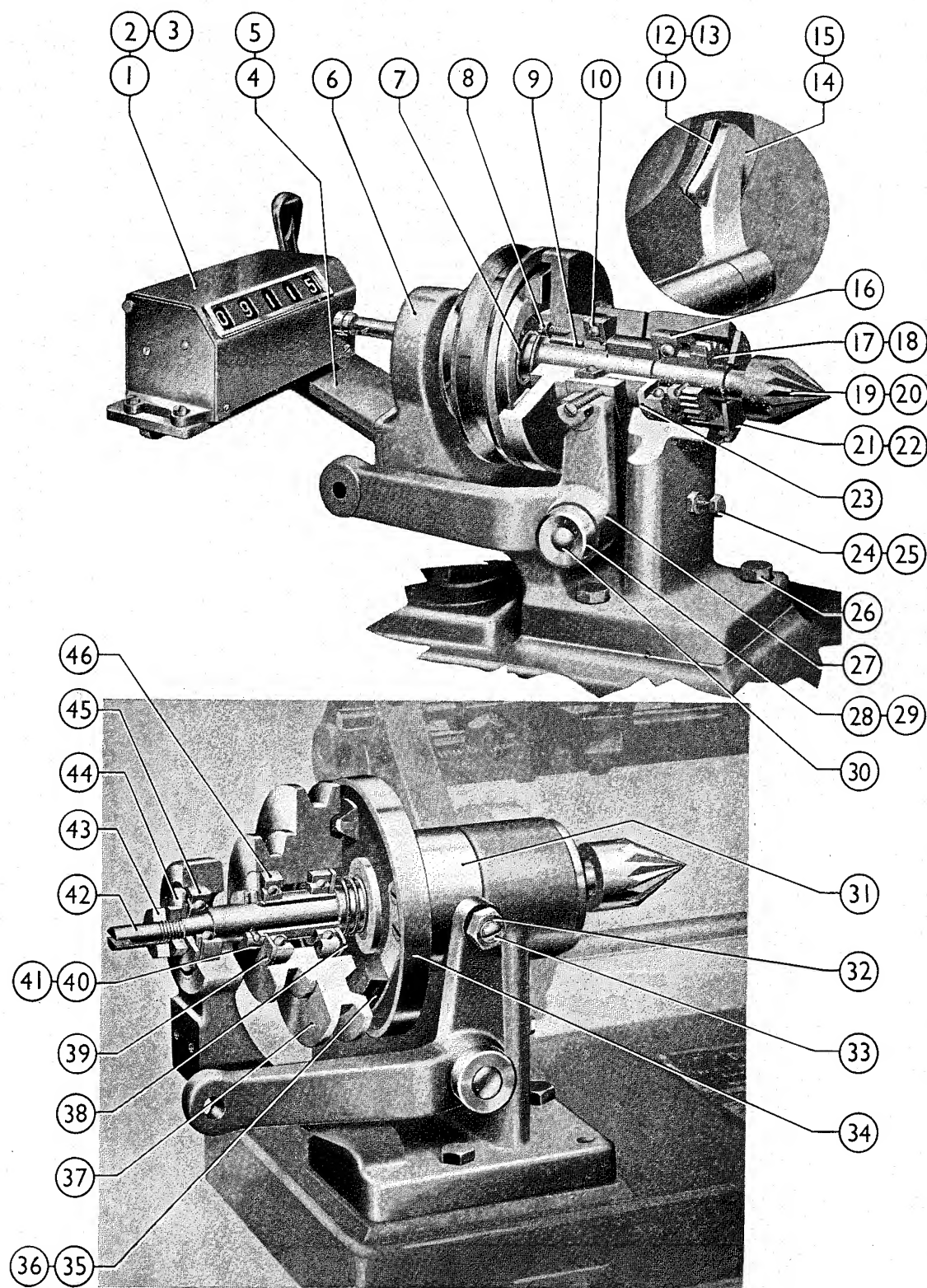


Plate 3—Parts List

ITEM NO.	DESCRIPTION	PART NO.	NO. OFF	ITEM NO.	DESCRIPTION	PART NO.	NO. OFF
1	Gear Box Frame . . .	40075/3	1	41	Change Gear — 46 Teeth	30018/27	1
2	Gear Box Cover . . .	20119/2	1	42	Change Gear — 48 Teeth	30018/29	1
3	Screw Securing Gear Box Cover	S.674	12	43	Change Gear — 50 Teeth	30018/31	1
4	Inspection Cover Assembly	10889/B	1	44	Change Gear — 55 Teeth	30018/33	1
5	Clutch Gear 48 Teeth	10620/1	2	45	Change Gear — 60 Teeth	30018/35	1
* 6	Reversing Clutch . . .	10612/1	1	46	Change Gear — 65 Teeth	30018/37	1
7	Stop Collars	10585/1	2	47	Change Gear — 70 Teeth	30018/39	1
8	Pins Securing Stop Collars	R.27	2	48	Change Gear — 75 Teeth	30018/43	1
9	Taper Pin	R.27	1	49	Change Gear — 80 Teeth	30018/45	1
*10	Ratchets	10619/1	2	50	Idler Assembly . . .	10831/A	1
11	Screws Securing Ratchets	S.494	8	51	Stud	10809/1	2
12	Ball Race	BR.10	2	52	Gear Quadrant Spindle	10590/1	1
13	Special Lock Nut . . .	10621/1	1	53	Pin Securing Item 52	R.27	1
14	Standard Hexagon Lock Nut	N.30	1	54	Lock Nut Standard Hexagon	N.31	1
15	Guard for Change Gears	40080/3	1	55	Standard Washer . .	W.23	1
16	Spring for Trip Arm	10581/1	1	56	Gear Quadrant Assembly	13772/A	1
17	Ball Race	BR.3	1	57	Ball Race	BR.5	2
18	Journal Screw for Ball Race	10578/1	1	58	Driving Pinion 16 Teeth	10618/1	1
19	Lock Nut	N.21	1	59	Pin Securing Item 58	R.27	1
20	Special Washer	10589/1	2	60	Shaft for Driving Pinion 16 Teeth . .	10573/1	1
21	Oil Well	10623/1	1	61	Collar	10613/1	1
22	Oil Seal	10622/1	1	62	Pin Securing Collar Item 61	R.27	1
23	Screws Securing Oil Well	S.460	2	63	Trip Arm	10576/1	1
24	Nuts for Item 23 . . .	N.23	2	64	Trip Arm Point . . .	10591/1	1
25	Gear Collar Assembly	10627/1	1	65	Pin Securing Trip Arm Lever	R.27	1
26	Pin Securing Item 25	R.27	1	66	Gear Collar Assembly	10617/A	1
27	Ball Race	BR.6	1	67	Pin Securing Item 66	R.27	1
28	Trip Arm Lever Assembly	13771/A	1	68	Stud	10808/1	1
29	Fulcrum Bolt for Trip Arm	10574/1	1	69	Terminal Nut	10807/2	3
30	Special Washers for Change Gears	10586/1	3	70	Collar	10613/1	1
31	Screws Retaining Change Gears	S.224	3	71	Pin Securing Collar .	R.27	1
32	Change Gear — 28 Teeth	30018/4	1	72	Ball Race	BR.5	2
33	Change Gear — 30 Teeth	30018/6	2	73	Spindle for Intermediate Gear . . .	10583/1	1
34	Change Gear — 32 Teeth	30018/9	1	74	Distance Collar . . .	10584/1	1
35	Change Gear — 34 Teeth	30018/10	1	75	Intermediate Gear 30 Teeth	10614/1	1
36	Change Gear — 36 Teeth	30018/13	1	76	Lead Screw	20087/1	1
37	Change Gear — 38 Teeth	30018/16	1	77	Dust Cover	10587/2	2
38	Change Gear — 40 Teeth	30018/19	1	78	Sleeve	10611/1	1
39	Change Gear — 42 Teeth	30018/22	1	79	Pins for Sleeve . . .	20339/6	2
40	Change Gear — 44 Teeth	30018/24	1	*When the Headstock runs in a clockwise direction: Item No. 6—Reversing Clutch Part No. 10612/1 and Item No. 10—Ratchet Part No. 10619/1 must be replaced by 10612/2 and 10619/2 respectively.			

Additional Change Gears (see gear tables pages 11 & 13). Change Gear 24 Teeth 30018/1
Change Gear 25 Teeth 30018/3 Change Gear 72 Teeth 30018/41

PLATE 3—GEARBOX

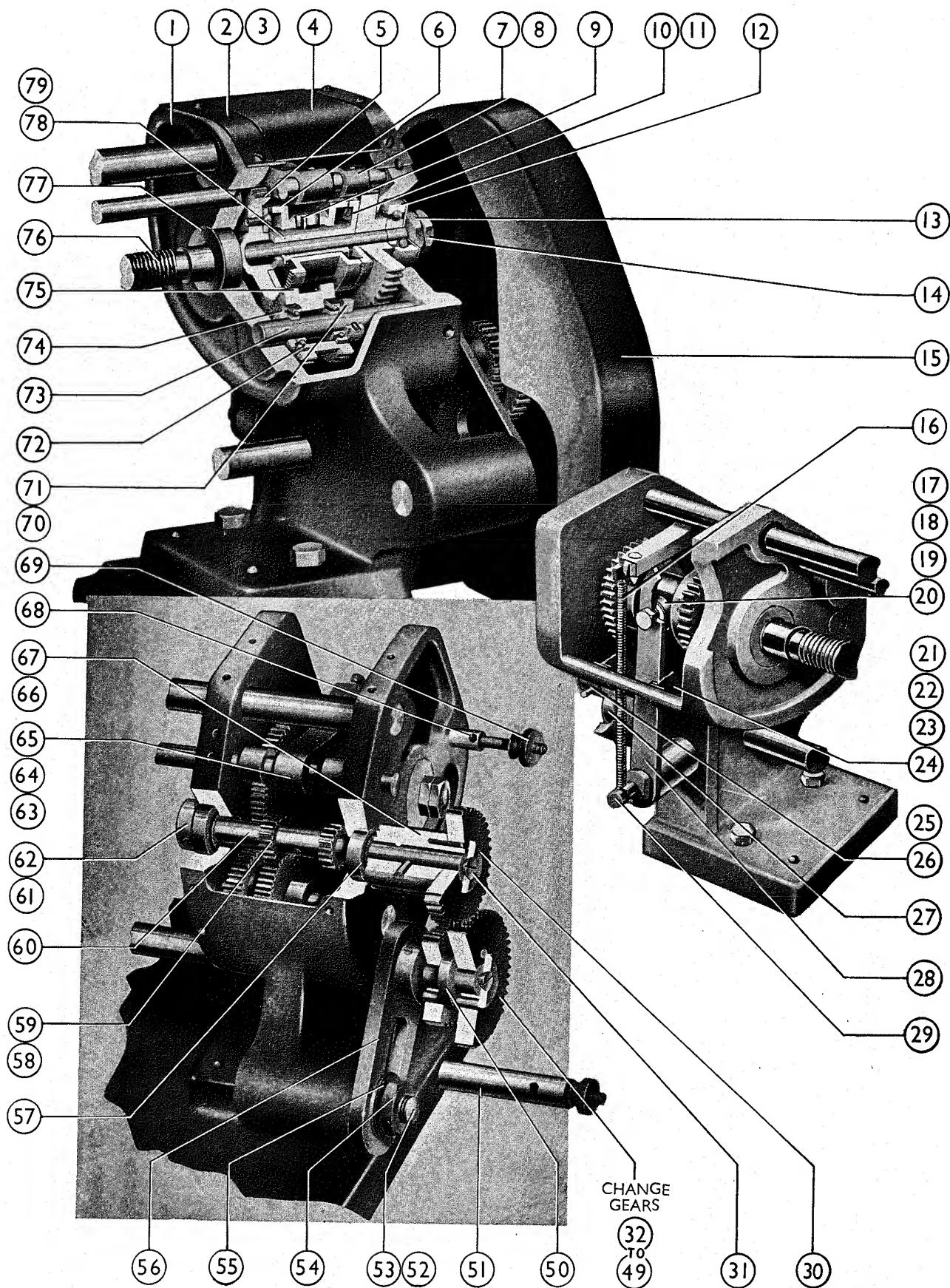


Plate 4—Parts List

TAIL STOCK

ITEM NO.	DESCRIPTION	PART NO.	NO. OFF	ITEM NO.	DESCRIPTION	PART NO.	NO. OFF
1	Cone Centre . . .	10595/2	1	10	Tailstock Spindle . .	11034/1	1
2	Retaining Cap . . .	11037/2	1	11	Fulcrum Pin . . .	20339/35	1
3	Ball Race . . .	BR.4	1	12	Lever . . .	11035/1	1
4	Collet . . .	11036/2	1	13	Hand Wheel . . .	20325/4	1
5	Thrust Ball . . .	BR.16	1	14	Shoulder Screw . .	11041/1	1
6	Clamping Bolt . . .	11040/1	1	15	Tailstock Bolt . . .	10600/2	1
7	Knob . . .	11039/1	1	16	Tommy Bar . . .	10598/2	1
8	Spring . . .	11042/1	1	17	Nut . . .	10610/2	1
9	Key Pin . . .	20339/10	1	18	Tailstock Casting . .	20171/2	1

CARRIAGE ASSEMBLY

ITEM NO.	DESCRIPTION	PART NO.	NO. OFF	ITEM NO.	DESCRIPTION	PART NO.	NO. OFF
1	Carriage Assembly including Wire Guide Arm, Pulleys and Half Nut, etc. . .	40037/A	1	10	Front Wire Guide Pulley . . .	10569/2	1
2	Wire Guide Arm	40036/3	1	11	Half Nut . . .	10602/1	1
3	Tommy Bar . . .	10599/2	1	12	Screws Securing Item 11 . . .	S.461	2
4	Clamping Lock Nut	10604/2	1	13	Dowel Pins for Item 11 . . .	20339/14	2
5	Back Wire Guide Pulley . . .	10571/2	1	14	Grub Screws Retaining Carriage Tube . .	AS.24	2
6	Distance Washers . .	10570/1	2	15	Carriage Tube . . .	10567/2	1
7	Ball Races for Wire Guide Pulleys . .	BR.4	2	16	Bolt Assembly . . .	11813/A	1
8	Shoulder Screws Securing Pulleys . .	10568/1	2	17	Half Nut Arm . . .	10566/3	1
9	Dust Covers for Ball Races . . .	10608/2	2	18	Tension Spindle for Half Nut Arm . . .	10607/2	1
				19	Knurled Lock Nut . .	10606/2	1
				20	Adjusting Screw . .	10605/2	1
				21	Tension Spring for Half Nut Arm . . .	10609/1	1

PLATE 4—TAIL STOCK & CARRIAGE ASSEMBLY

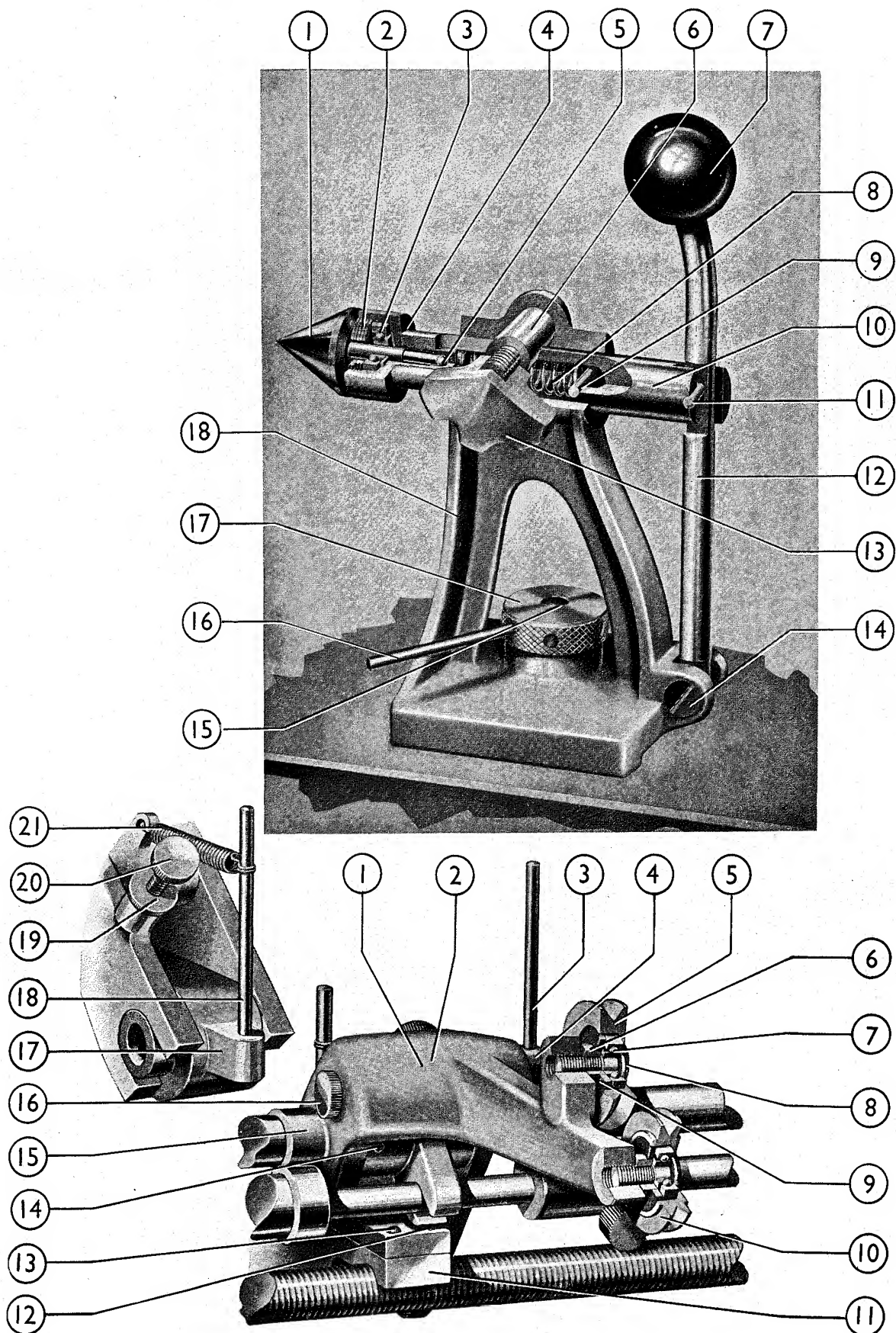


Plate 5—Parts List

ITEM NO.	DESCRIPTION	PART NO.	NO. OFF	ITEM NO.	DESCRIPTION	PART NO.	NO. OFF
1	Flexible Coupling Solenoid to Micro Switch	13814/A	1	8	Screws Securing Bracket	S.448	2
*2	Solenoid Assembly (including coil)	20484/A	1	9	Micro Switch	11318/4	1
3	Solenoid Coil 200-250 Volt	13809/1		10	Housing for Micro Switch	20410/A	1
	Solenoid Coil 110 Volt	13809/2		11	Spring for Release Arm	11908/1	1
	Solenoid Coil 400-440 Volt	13809/3	1	12	Release Arm Assembly	13813/A	1
4	Revolution Counter, pre-determined type	10217/1	1	13	Bearing Bracket	12743/2	1
5	Screws Securing Revolution Counter	S.448	4	14	Foot Treadle Complete Assembly	40207/A	1
6	Nuts for Item 5	N.23	4	15	Spring for Foot Treadle	10880/1	1
7	Bracket for Revolution Counter	40029/24	1	16	Flexible Coupling, Micro Switch to Rev. Counter	13815/A	1

* Please State Voltage

PLATE 5—ELECTRICAL GEAR AND TREADLE

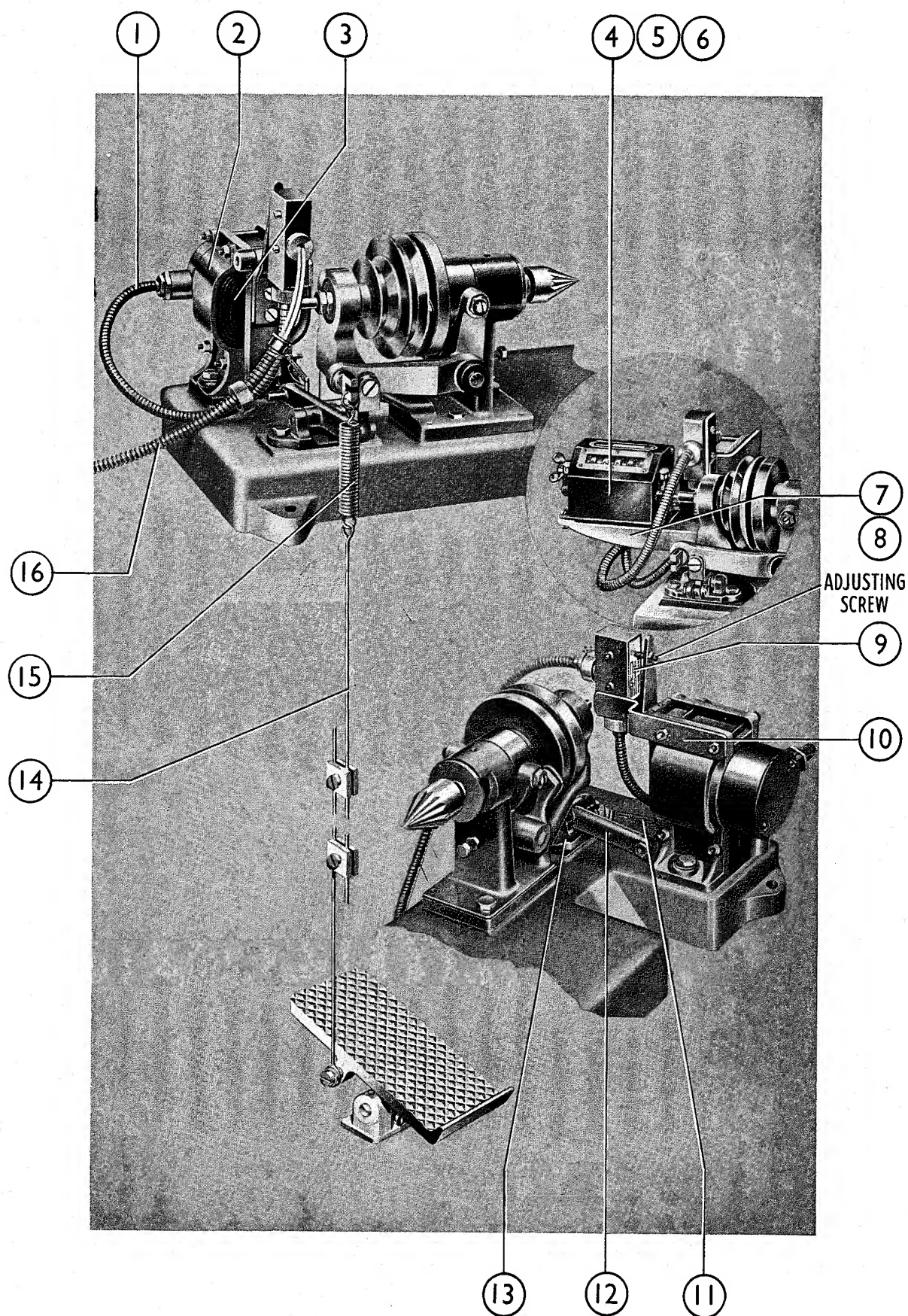


Plate 6 Parts List

NARROW WINDING ATTACHMENT

(Illustrated, top, page 27)

ITEM NO.	DESCRIPTION	PART NO.	OFF NO.
1	Complete Assembly .	40401/A	
2	Wire Guide Pulley with Pivots	13880/A	1
3	Pivots	10158/3	2

STRIP WINDING ATTACHMENT

(Illustrated centre, page 27)

STRIP WINDING ATTACHMENTS are made specially to order for winding thin strips, such as those used in domestic appliances and strip resistors. When sending quotation please state length, width and thickness of strip and where possible send a sample; it is important also to state gauge and type of wire or conductor.

MULTIPLE WINDING ASSEMBLY

ITEM NO.	DESCRIPTION	PART NO.	NO. OFF
1	Complete Assembly 4 Arms	40398/A	1
2	Complete Assembly 3 Arms	40398/B	1
3	Complete Assembly 2 Arms	40398/C	1
4	Back Wire Guide Pulley	10571/2	1
5	Ball Race	BR.4	1
6	Front Wire Guide Pulley	10569/2	1
7	Ball Race	BR.4	1
8	Wire Guide Complete Assembly	20786/A	1
9	Wire Guide Arm Casting Machined .	20540/2	1
10	Shoulder Screws Securing Pulleys .	10568/1	2

PLATE 6

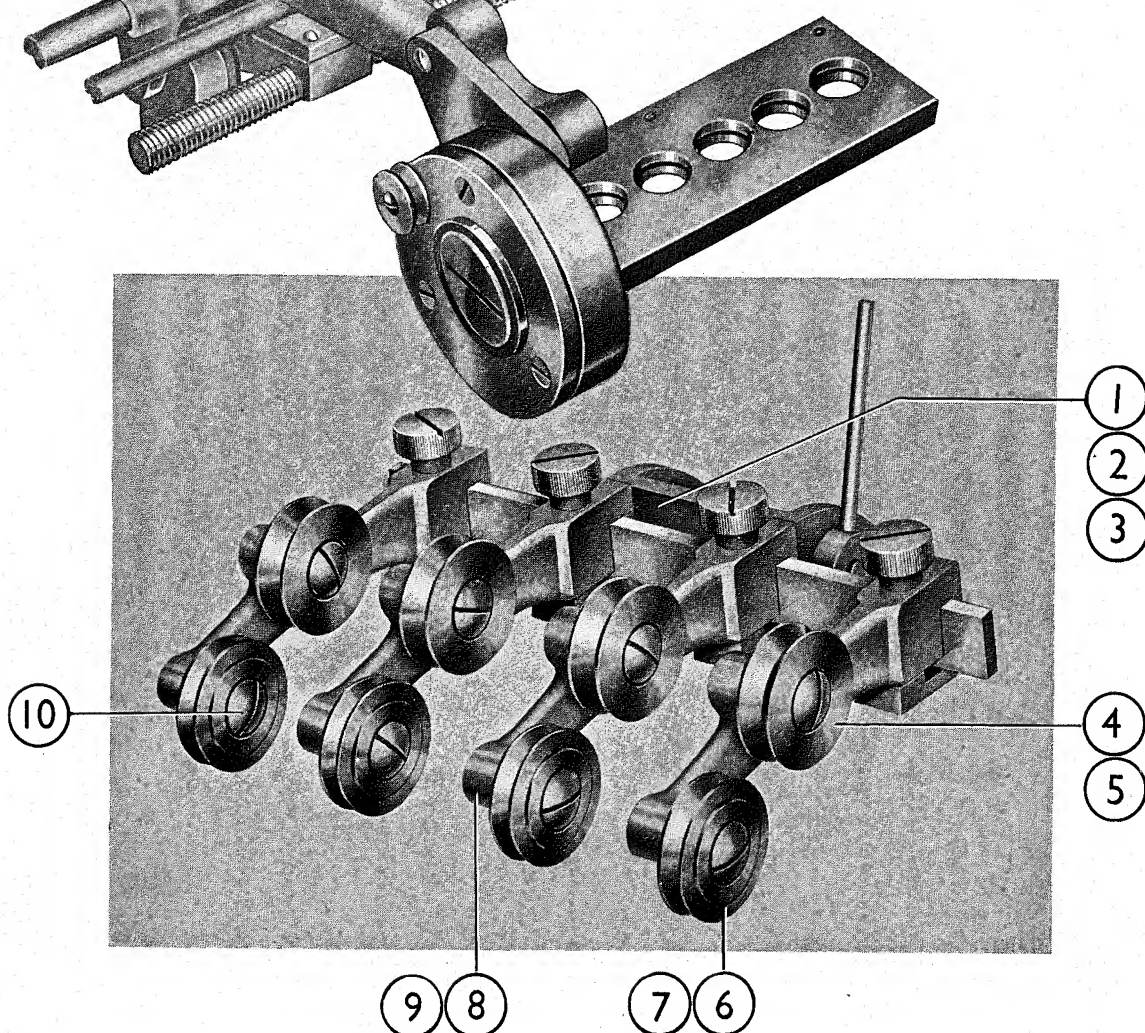
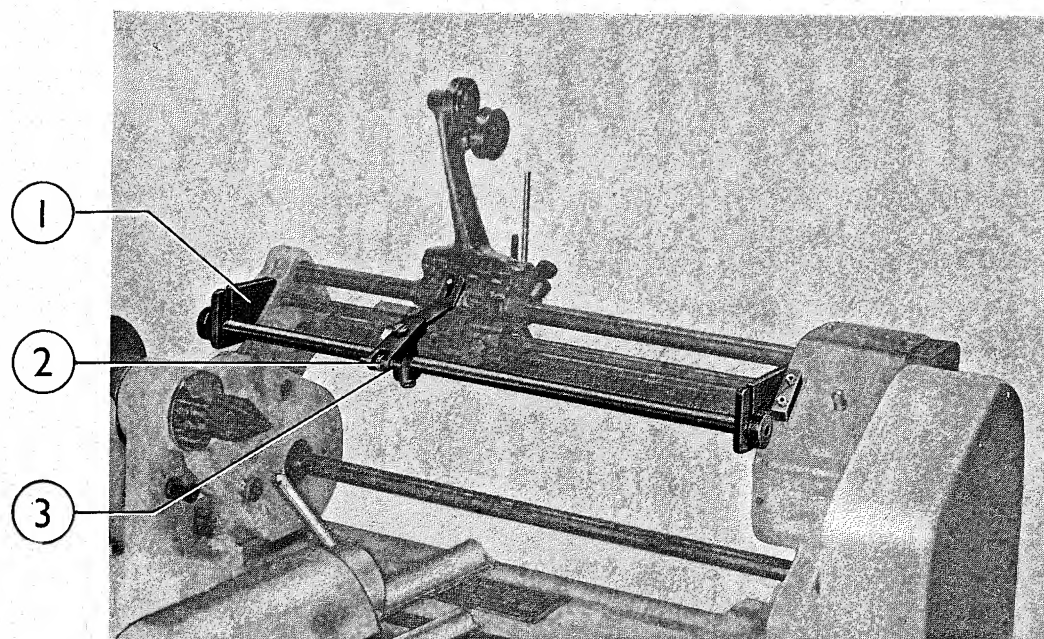
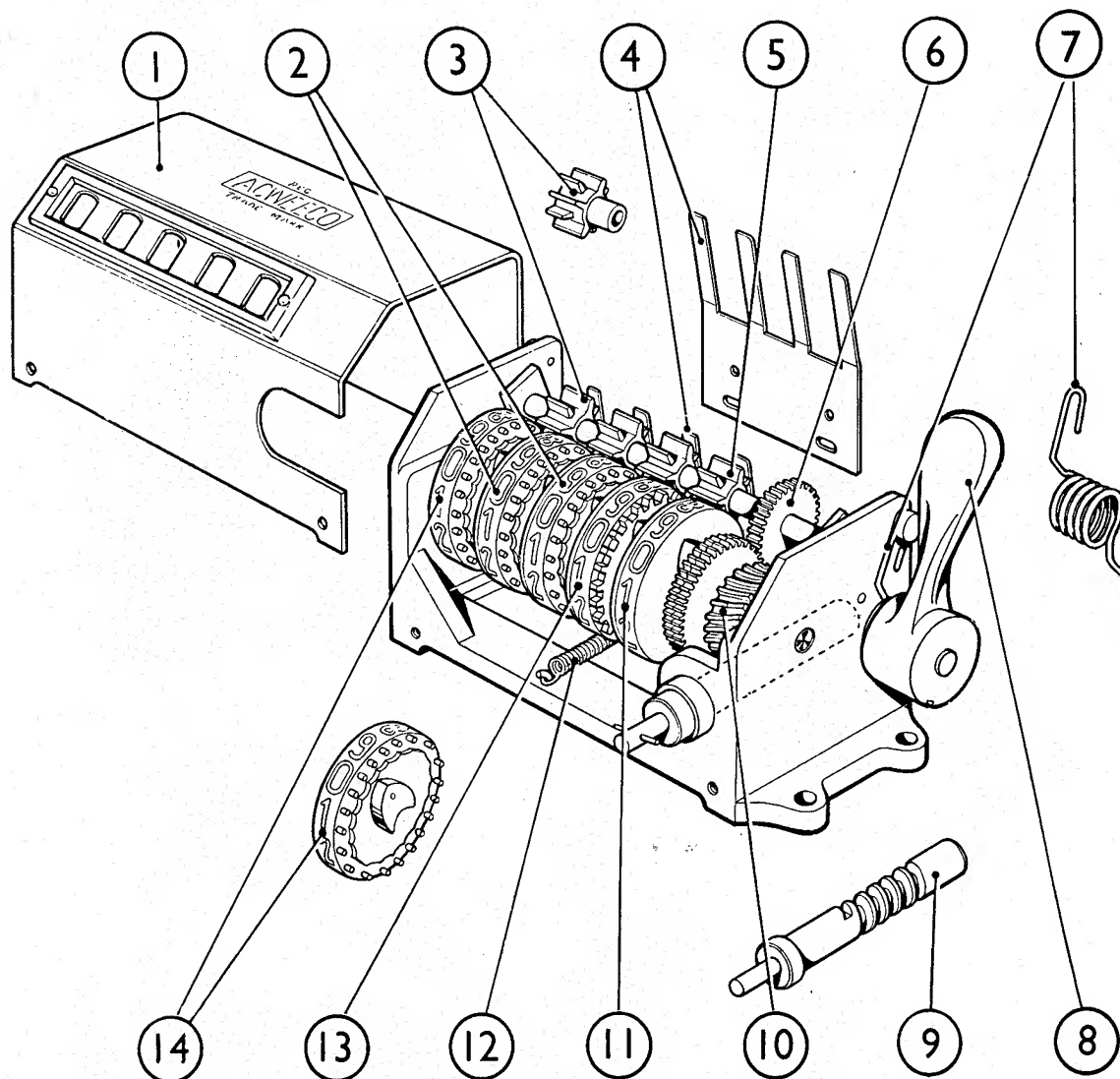


PLATE 7—LEVER RE-SET TYPE COUNTER

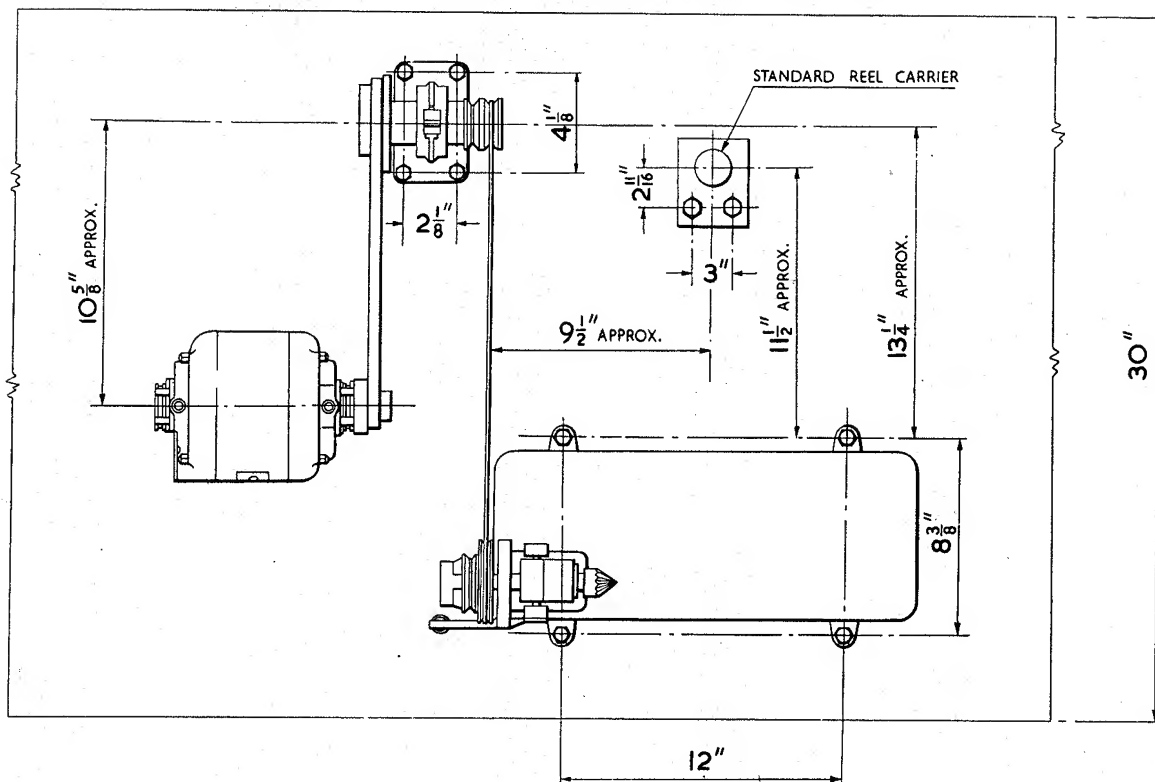


Parts List

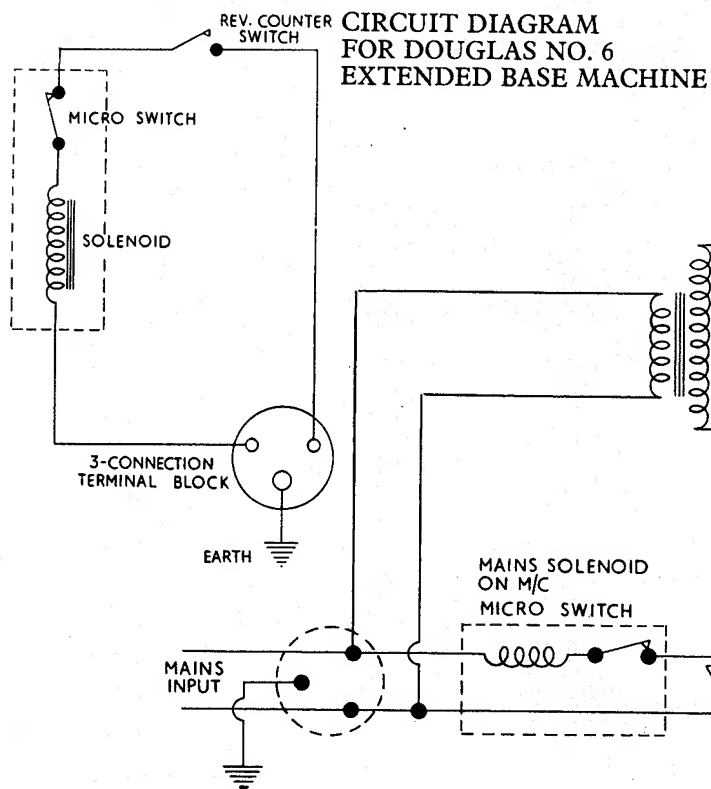
ITEM NO.	DESCRIPTION	PART NO.	NO. OFF	ITEM NO.	DESCRIPTION	PART NO.	NO. OFF
1	Cover	11352/1	1	9	L.H. Worm Shaft	11367/1	1
2	Indicator Drum, Hundreds and Thousands	11355/1	2	10	L.H. Worm Wheel and Pinion	11365/1	1
3	Brass Pinion	11363/1	3	11	Indicator Drum, Units	11353/1	1
4	Reset Locating Spring	11357/1	1	12	Return Spring	11358/1	1
5	Steel Pinion	11362/1	1	13	Indicator Drum, Tens	11354/1	1
6	Back Gear Main Pinion and Bush	11361/1	1	14	Indicator Drum, Tens of Thousands Counter Complete L.H.	11356/1 10217/3	1
7	Reset Spring	11359/1	1				
8	Reset Lever and Shaft	11360/1	1				

IMPORTANT. Should the Revolution Counter be constructed with nylon parts, Items 2, 3, 5, 11, 13 and 14 will have part numbers with the suffix "2" instead of "1".

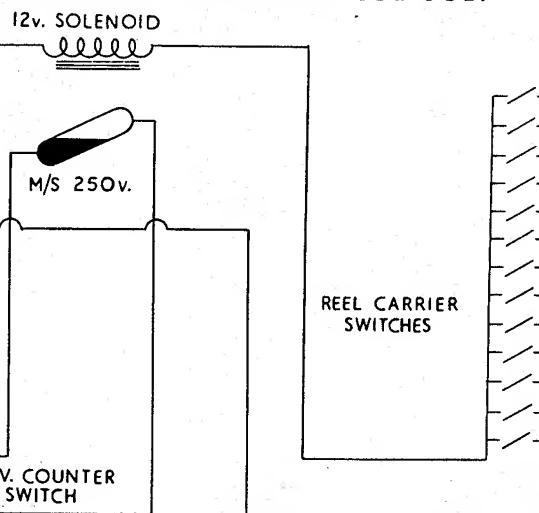
PLATE 8—BENCH LAYOUT AND ELECTRICAL CIRCUITS



BENCH LAYOUT

CIRCUIT DIAGRAM
FOR DOUGLAS NO. 6
EXTENDED BASE MACHINE

SUGGESTED CIRCUIT DIAGRAM
FOR DOUGLAS No. 6 EXTENDED
BASE MACHINE WHEN COMPLETE
WITH REEL CARRIERS FITTED
WITH ELECTRICAL CUT-OUT.



"DOUGLAS" MULTI-COIL WINDING MACHINES

OTHER MACHINES IN THE "AVO" RANGE

- "DOUGLAS" NO. 6
- "DOUGLAS" NO. 1
- "DOUGLAS" NO. 3
- "MACADIE" S.C.
- "MACADIE" T.D.S.M.
- "DOUGLAS" NO. 15
- "MACADIE" FULLY AUTOMATIC P.I
- "DOUGLAS" H.F.
- "DOUGLAS" NO. 3 EXTENDED BASE
- "DOUGLAS" LARGE MULTI WINDER
- "DOUGLAS" SMALL MULTI WINDER
- "DOUGLAS" DUAL HEAD
- "DOUGLAS" MAGNETO
- "DOUGLAS" SPECIAL EXTENDED BASE NO. 6
- "DOUGLAS" UNIVERSAL REEL CARRIER
- "DOUGLAS" WAVE WINDER
- "DOUGLAS" FLYER DRUM CARRIER
- "DOUGLAS" HEAVY DUTY POWER DRIVEN
- "DOUGLAS" HEAVY DUTY H.F.
- "DOUGLAS" PROGRESSIVE WAVE WINDER
- "DOUGLAS" ELECTROMAGNETIC COUNTERSHAFT
- "DOUGLAS" GENERAL PURPOSE REEL CARRIER

DOUGLAS No. 6. GEAR TABLE

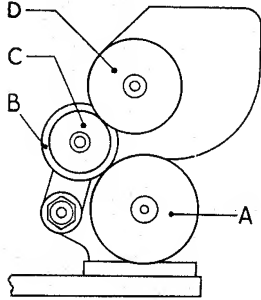
INCHES

TRAVERSE PER TURN IN INCHES	A	B	C	D	TRAVERSE PER TURN IN INCHES	A	B	C	D	TRAVERSE PER TURN IN INCHES	A	B	C	D
*0-0010"	24	75	25	80	0-0096"	30	30	48	50	0-0192"	48	50	60	30
*0-0011"	24	72	25	75	0-0098"	28	50	70	40	0-0194"	32	44	80	30
*0-0012"	24	70	28	80	0-0100"	30	40	48	36	0-0196"	48	50	70	30
*0-0013"	24	65	25	70	0-0102"	34	28	42	50	0-0198"	38	48	80	32
*0-0014"	24	60	28	80	0-0104"	65	30	36	75	0-0200"	50	40	48	30
*0-0015"	24	70	35	80	0-0106"	30	46	65	40	0-0202"	40	44	80	36
*0-0016"	24	60	30	75	0-0108"	36	28	42	50	0-0204"	40	42	60	28
*0-0017"	25	65	32	72	0-0110"	42	28	44	60	0-0206"	34	44	80	30
*0-0018"	28	70	36	80	0-0112"	42	30	48	60	0-0208"	38	40	70	32
*0-0019"	24	70	40	72	0-0114"	38	28	42	50	0-0210"	42	50	70	28
*0-0020"	28	60	30	70	0-0116"	30	60	65	28	0-0212"	42	44	80	36
0-0022"	30	80	44	75	0-0118"	38	46	60	42	0-0214"	44	48	70	30
0-0024"	30	60	36	75	0-0120"	40	28	42	50	0-0216"	44	40	55	28
0-0026"	38	55	30	80	0-0122"	32	30	48	42	0-0218"	48	44	60	30
0-0028"	30	50	28	60	0-0124"	36	42	55	38	0-0220"	44	40	60	30
0-0030"	30	50	30	60	0-0126"	34	60	80	36	0-0222"	46	38	55	30
0-0032"	30	50	32	60	0-0128"	32	30	48	40	0-0224"	44	42	60	28
0-0034"	30	50	34	60	0-0130"	48	60	65	40	0-0226"	46	40	55	28
0-0036"	30	50	36	60	0-0132"	42	28	44	50	0-0228"	34	32	60	28
0-0038"	30	50	38	60	0-0134"	32	44	70	38	0-0230"	46	40	60	30
0-0040"	30	50	40	60	0-0136"	34	30	48	40	0-0232"	46	34	48	28
0-0042"	30	50	42	60	0-0138"	42	28	46	50	0-0234"	36	44	80	28
0-0044"	30	50	44	60	0-0140"	28	30	60	40	0-0236"	38	46	80	28
0-0046"	30	50	46	60	0-0142"	38	28	46	44	0-0238"	40	36	60	28
0-0048"	30	50	48	60	0-0144"	36	30	48	40	0-0240"	36	30	60	30
0-0050"	30	30	40	80	0-0146"	42	30	48	46	0-0242"	50	55	80	30
0-0052"	28	70	65	50	0-0148"	44	65	70	32	0-0244"	46	44	70	30
0-0054"	48	40	36	80	0-0150"	30	30	60	40	0-0246"	46	44	80	34
0-0056"	42	30	30	75	0-0152"	38	30	48	40	0-0248"	46	34	55	30
0-0058"	44	38	30	60	0-0154"	42	30	44	40	0-0250"	30	30	70	28
0-0060"	30	30	36	60	0-0156"	36	50	65	30	0-0252"	44	32	55	30
0-0062"	30	55	50	44	0-0158"	30	38	60	30	0-0254"	32	36	80	28
0-0064"	36	30	32	60	0-0160"	30	50	80	30	0-0256"	48	50	80	30
0-0066"	36	60	55	50	0-0162"	34	42	60	30	0-0258"	42	38	70	30
0-0068"	36	30	34	60	0-0164"	34	38	55	30	0-0260"	60	50	65	30
0-0070"	28	50	60	48	0-0166"	80	46	42	44	0-0262"	40	30	55	28
0-0072"	36	60	48	40	0-0168"	42	40	48	30	0-0264"	38	36	80	32
0-0074"	42	65	55	48	0-0170"	34	40	60	30	0-0266"	34	32	70	28
0-0076"	30	30	38	50	0-0172"	44	40	50	32	0-0268"	50	40	60	28
0-0078"	42	70	65	50	0-0174"	40	46	60	30	0-0270"	34	36	80	28
0-0080"	30	30	40	50	0-0176"	44	40	48	30	0-0272"	42	36	70	30
0-0082"	40	36	48	65	0-0178"	46	42	65	40	0-0274"	46	48	80	28
0-0084"	30	30	42	50	0-0180"	36	40	60	30	0-0276"	70	30	65	55
0-0086"	65	34	36	80	0-0182"	60	36	46	42	0-0278"	50	40	80	36
0-0088"	30	30	44	50	0-0184"	46	40	48	30	0-0280"	36	30	70	30
0-0090"	30	28	42	50	0-0186"	34	40	70	32	0-0282"	46	38	70	30
0-0092"	30	30	46	50	0-0188"	32	40	80	34	0-0284"	65	30	42	32
0-0094"	40	65	55	36	0-0190"	38	40	60	30	0-0286"	30	30	80	28

GEAR SET-UPS GIVEN ARE THEORETICALLY CORRECT BUT ALLOWANCE MUST BE MADE FOR VARIATIONS IN WIRE DIAMETER, ETC. THE ACTUAL SET-UPS MUST BE FOUND BY TRIAL.

DOUGLAS No. 6. GEAR TABLE

INCHES

TRAVERSE PER TURN IN INCHES	A	B	C	D	TRAVERSE PER TURN IN INCHES	A	B	C	D	TRAVERSE PER TURN IN INCHES	A	B	C	D
0-0288"	44	30	55	28	0-0384"	80	32	46	30	0-0600"				
0-0290"	46	34	60	28	0-0386"	80	34	46	28	0-0605"				
0-0292"	50	40	70	30	0-0388"	70	30	50	30	0-0610"				
0-0294"	38	30	65	28	0-0390"	80	55	75	28	0-0615"				
0-0296"	40	36	80	30	0-0392"	80	32	44	28	0-0620"				
0-0298"	38	34	80	30	0-0394"	80	44	65	30	0-0625"	80	32	75	30
0-0300"	48	32	60	30	0-0396"	65	30	55	30	0-0630"	80	34	75	28
0-0302"	70	30	44	34	0-0398"					0-0635"				
0-0304"	80	40	70	46	0-0400"	80	40	60	30	0-0640"				
0-0306"	80	34	65	50	0-0405"	80	40	65	32	0-0645"				
0-0308"	60	28	46	32	0-0410"	80	32	46	28	0-0650"				
0-0310"	48	28	65	36	0-0415"	70	30	50	28	0-0655"				
0-0312"	48	44	80	28	0-0420"	80	38	60	30	0-0660"				
0-0314"	80	28	55	50	0-0425"	80	30	48	30	0-0665"	80	30	75	30
0-0316"	80	38	60	40	0-0430"	80	34	55	30	0-0670"	80	32	75	28
0-0318"	80	40	70	44	0-0435"	80	40	70	32	0-0675"				
0-0320"	80	30	60	50	0-0440"	80	34	60	32	0-0680"				
0-0322"	80	30	46	38	0-0445"	80	36	60	30	0-0685"				
0-0324"	60	30	65	40	0-0450"					0-0690"				
0-0326"	80	30	44	36	0-0455"	80	44	70	28	0-0695"				
0-0328"	75	50	70	32	0-0460"					0-0700"				
0-0330"	80	65	75	28	0-0465"	80	40	65	28	0-0715"	80	30	75	28
0-0332"	80	30	60	48	0-0470"	75	32	60	30	FORMULA TO FIND GEARS A.B.C. & D.				
0-0334"	46	30	70	32	0-0475"	80	36	60	28					
0-0336"	80	30	48	38	0-0480"	80	36	65	30	DIA. OF WIRE = $\frac{A}{B} \times \frac{C}{D}$ 0-010				
0-0338"	46	28	70	34	0-0485"									
0-0340"	44	28	65	30	0-0490"	80	36	75	34					
0-0342"	80	38	65	40	0-0495"									
0-0344"	80	32	55	40	0-0500"	70	30	60	28	POSITION OF GEARS A.B.C. & D.				
0-0346"	80	30	65	50	0-0505"									
0-0348"	60	28	65	40	0-0510"					GEARS PROVIDED 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 55, 60, 65, 70, 75, 80				
0-0350"	42	28	70	30	0-0515"									
0-0352"	80	34	60	40	0-0520"	80	36	75	32	ADDITIONAL GEARS 24, 25 & 72, ARE REQUIRED FOR COMBINATIONS THUS *				
0-0354"	80	30	48	36	0-0525"	80	30	75	38					
0-0356"	46	28	65	30	0-0530"					*THESE MAY BE PURCHASED FROM THE COMPANY.				
0-0358"	40	28	75	30	0-0535"	80	32	60	28					
0-0360"	80	34	46	30	0-0540"	80	32	65	30					
0-0362"	80	55	70	28	0-0545"									
0-0364"	80	36	46	28	0-0550"	80	34	75	32					
0-0366"	60	30	55	30	0-0555"	80	36	70	28					
0-0368"	80	40	70	38	0-0560"									
0-0370"	80	34	44	28	0-0565"									
0-0372"	80	30	42	30	0-0570"	80	30	60	28					
0-0374"	75	40	60	30	0-0575"									
0-0376"	80	34	48	30	0-0580"									
0-0378"	70	40	65	30	0-0585"	80	32	70	30					
0-0380"	80	42	60	30	0-0590"	80	34	75	30					
0-0382"	65	34	60	30	0-0595"	80	36	75	28					

GEAR SET-UPS GIVEN ARE THEORETICALLY CORRECT BUT ALLOWANCE MUST BE MADE FOR VARIATIONS IN WIRE DIAMETER, ETC. THE ACTUAL SET-UPS MUST BE FOUND BY TRIAL.